SONY®

COLOR VIDEO PRINTER

UP-2800
UP-2900MD
UP-2950MD
UP-2300
UP-2800P
UP-2850P
UP-2300P

SERVICE MANUAL

Vol. 1 (1st Edition)

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This section is extracted from operation manual.

3-860-608-21 (1)

SONY.

Color Video Printer

Instructions For Use   Page 2

Before operating this unit, please read this manual thoroughly and retain it for future reference.

CE

UP-2300P/2800P/2850P
UP-2900MD/2950MD

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Tabel of Contents

Owner's Record

The model and serial numbers are located at the rear. Record these number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____

Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

For UP-2800P/2850P/2900MD/2950MD
Symbol on the products

This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For the customers in the U.S.A.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection agaist harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment. This device requires shielded interface cables to comply with FCC emission limits.

For the customers in Canada (for UP-2800P/2850P/2900MD/2950MD)

This unit has been certified according to Standard CSA C22.2 No.601.1.

For the customers in Europe (for UP-2800P/2850P/2900MD/2950MD)

Important safeguards/notices for use in the medical environments

1. All the equipments connected to this unit shall be certified according to Standard IEC601-1, IEC950, IEC65 or other IEC/ISO Standards applicable to the equipments.

2. When this unit is used together with other equipment in the patient area*, the equipment shall be either powered by an isolation transformer or connected via an additional protective earth terminal to system ground unless it is certified according to Standard IEC601-1.

   * Patient Area
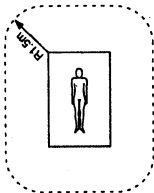
3. The leakage current could increase when connected to other equipment.

4. This equipment generates, uses, and can radiate frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to other equipment. If this unit causes interference (which can be determined by unplugging the power cord from the unit), try these measures: Relocate the unit with respect to the susceptible equipment. Plug this unit and the susceptible equipment into different branch circuit. Consult your dealer.

Introduction

About This Manual

This manual covers the following UP-2000 series color video printers.

- UP-2300P
- UP-2800/2800P
- UP-2850P
- UP-2900MD
- UP-2950MD

Wherever the operation or any other item differs between the models, this manual clearly describes those differences.

The difference among models is as follows.

No. of memories	RGB SYNC connector	Printer window display (LCD)	NTSC/PAL selector (TV system)
UP-2300P	1	None	None	None (PAL)
UP-2800P	1	Yes	Yes	None (PAL)
UP-2850P	4	Yes	Yes	None (PAL)
UP-2900MD	1	Yes	Yes	Yes (NTSC/PAL)
UP-2950MD	4	Yes	Yes	Yes (NTSC/PAL)

In this manual, the UP-2950MD is used for illustrations.
Also, the monitor display and printer window display are used to explain the operation. If your printer is a UP-2300P which is not equipped with the printer window display, perform operations according to the monitor display explanation.

Organization of this manual

This manual is divided into four chapters. This section explains the organization of this manual.

Introduction

Describes the features and system configuration of the color video printer.

Operation

Describes actual printing once all connections and adjustments have been made, as explained in the next chapter. You will be able to make various types of printouts after reading through this chapter.

Installation and adjustment

Describes how to make connections and make adjustments using the menus displayed on the video monitor and printer window display. Once all connections and adjustments have been made, there should be no need to perform these operations again during normal printing operations. These operations must, however, be performed after reinstalling, or if the picture quality degrades, or if adjustment becomes necessary because the peripheral equipment is changed. Also covered is the use of the printer's remote control unit (not supplied).

About This Manual (continued)

Others

Notes the precautions to be observed when using the printer, lists errors, warnings and their handling, and explains troubleshooting. Also provided is information on the locations and functions of parts and controls, and the on-screen messages and menus used to operate the printer. Should you encounter any unfamiliar terms or items while reading this manual, consult the index at the end of the manual.

Conventions used

Cross references

Throughout this manual you will find references to other sections of the manual that contain related information.

Important note

Be sure to read the sections of the manual marked Note. They explain points that you should be aware of to operate the printer correctly and prevent malfunctions.

Index

Use the index, in addition to the table of contents, to find information you need when using the printer.

Monitor displays

Some monitor displays illustrated in this manual may differ slightly from the acutal display. The operation of the printer, however, remains as described in this manual.

System Overview

The UP-2000 series color video printer is designed for capturing images from video equipment such as VTR and for printing out high-resolution images, either in 256 shades in full color (about 300 dpi). You can make various types of printouts. You can also add a caption onto the printout. You can operate the daily printer operation by using the buttons and setup the printer interactively by picking from displayed menus.

Printouts that can be made with the printer

Printout of a full-size image (page 16)

Printout of two reduced images (page 32)
Capturing the whole screen
(only for UP-2850P/2950MD)
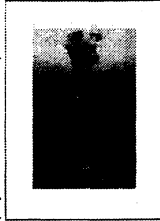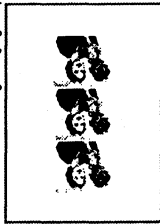
Printout of two reduced images
Capturing the center of the
screen (page 32)

Printout of four reduced images
(page 32)

Printout of 16 reduced images (page 32)

Printout of identical images a) (page 43)

Printout for stickers b) (page 42)
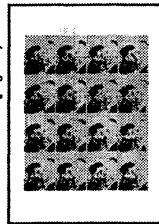
a) This can be used for identification photographs and there are two types.
   In one type, the size of one image in one printout can be adjusted freely. In the other, the size of one image is fixed.
   For details, see page 43.
b) There are two types of sticker-printouts.
   In one type, all images in a single printout are identical. In the other, all images in a single printout are different.
   For details, see page 42.

You can add a caption onto printouts introduced here.

System Overview (continued)

System Configuration

The following shows an example printer system configuration.

Video source
Provides the video input for printing. Connect a video source such as video recorder, video disk player or similarly.

Video monitor
Displays the images received from the video source (source image) and the image to be printed (memory source). Also displays the printer menus and messages.
When the printer power switch is set to off, you can view the image of the video source.

Color Video Printer

Foot switch (not supplied) allows you to operate the printer remotely.

Remote control unit (not supplied) allows you to operate the printer remotely.

Before Printing

This section describes the following operations that must be made prior to starting printing after mounting the paper tray and paper cover on the printer and making the necessary connections.

- Loading an ink ribbon cartridge (see below)
- Loading paper (see page 12)
- Selecting the input signal (see page 14)

Once the above operations have been completed, there should be no need to repeat them during routine printing. Perform them only when absolutely necessary.

Loading an Ink Ribbon Cartridge

To make printouts, an ink ribbon cartridge and paper (which are compatible) must be loaded. (see "Ink Ribbon Cartridge and Paper" page 99)
If the printer detects an incompatible combination, an error message appears.
Use the ink ribbon cartridge and print paper (supplied) to check if the video printer functions properly.

Notes
- Use only ink ribbon cartridge and paper that are designed for use with this printer. Failing to do so is likely to result in unsatisfactory printing or malfunctions.
- When replacing the ink ribbon cartridge, do not turn off the power. Turning off the power will cause the image stored in the memory to be lost.

1 Open the front panel by pulling the front panel top toward you.
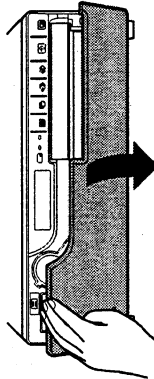
2 Remove the ink ribbon cartridge by pushing the ink ribbon cartridge itself.
The ink ribbon cartridge pops out.
When you use the printer first, this operation is not required.

1-5
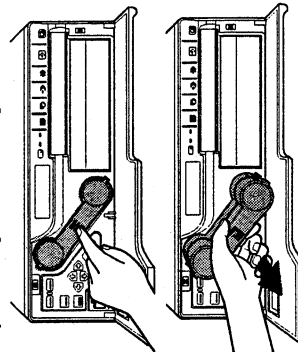
Before Printing (continued)

Note
Never put your hand into the ink ribbon compartment. The thermal head becomes very hot. You may burn yourself if you touch it.
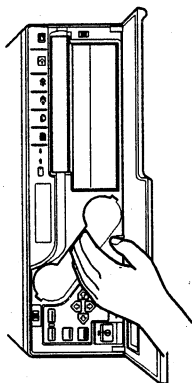
When the ink ribbon cartridge cannot be ejected
Turn the power off, then back on again. Then, after a while, press the ink ribbon cartridge.
In this case, the image in memory will be lost.

3 Remove any slack from the ink ribbon.
If the ribbon is left slack, it may be damaged when inserted.
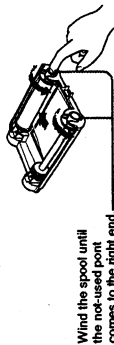
Wind the spool until the not-used point comes to the right end.

4 Insert the ink ribbon cartridge firmly until it stops.
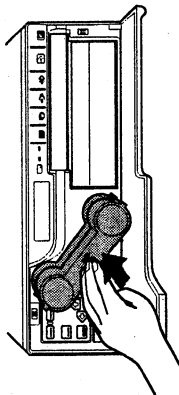
When the ink ribbon cartridge cannot be inserted
Turn the power off, then back on gain. Then, insert the ink ribbon holder.

5 Close the front panel.
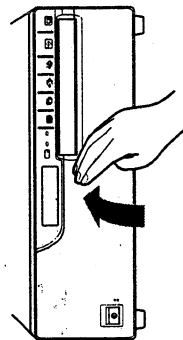
Notes

When using ink ribbon cartridge
• Once an ink ribbon cartridge has been completely used, replace it. Ink ribbon cartridges are not reusable.
• Do not touch the ink ribbon cartridge or place it in a dusty location. Finger prints or dust on the ink ribbon will result in imperfect printing or malfunction of the head.

When storing ink ribbon cartridge
• Avoid placing the ink ribbon in a location subject to:
— high temperatures
— high humidity
— excessive dust
— direct sunlight
• Store a partially used ink ribbon cartridge in its original packaging.

If your ink ribbon should tear
Repair the tear with transparent tape. There should be no problem with using the remaining portion of the ribbon.
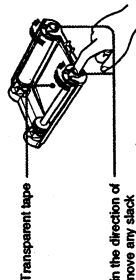
Transparent tape

Turn the spool in the direction of the arrow to remove any slack until the transparent tape cannot be seen.

Before Printing (continued)

Loading Paper

To load paper, follow the procedure below. Be careful not to touch the printing surface.

Notes
- When loading the paper while the printer is operating, do not turn off the power. Turning off the power will cause the image stored in memory to be lost.
- Do not touch the ink ribbon when handling the paper.

1 Open the front panel by pulling the front panel top towards you.

2 Push the part marked with PUSH on the paper tray.
The paper tray pops out.
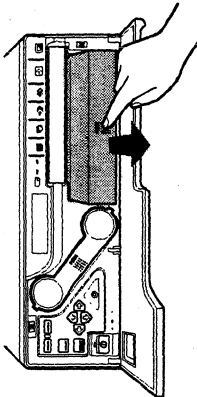
3 Place the paper in the paper tray.

Notes
- The amount of paper that the paper tray holds depends on the paper in use. When adding paper to a partly full tray, be careful that the total number of sheets does not exceed the limit. If you exceed this limit, paper jams may occur.
  The limit is the amount of paper contained in one printing pack.
  For detailed information on the maximum amount of paper that the paper tray can hold, see "Ink Ribbon Cartridge and Paper" page 99.
- Do not place different types of paper in the tray. Doing so may cause paper jams to occur.
- Load the paper so that it lays flat in the paper tray. If the paper is curled, it will overflow from the paper tray and the printing position may shift. If this happens, load fewer sheets in the paper tray.

Place the paper in the paper tray with the printing surface facing up

Printing surface

Riffle the paper

Printing surface

Front

Set the paper securely under the tab.
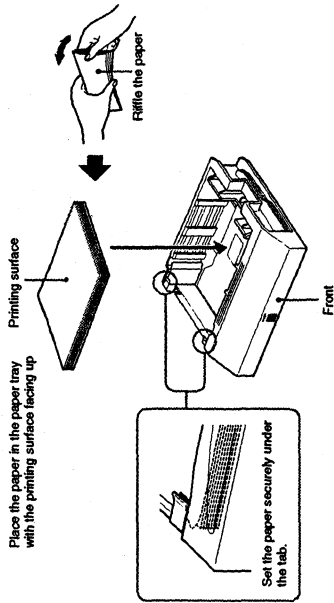
4 Slide the paper tray back into the printer until it clicks into place.
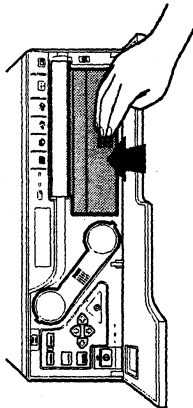
5 Close the front panel.

When handling the paper

Notes
Do not touch the printing surface. Dust or finger prints are likely to cause unsatisfactory printing or malfunction of the head. Hold the paper by the printing surface protection sheet.

When storing the paper

- Avoid storing the paper in a location subject to:
  — high temperatures
  — high humidity
  — excessive dust
  — direct sunlight
- Use the original package for storing unused paper.

Before Printing (continued)

Selecting the Input Signal

Before printing, select the input signal (the input connector to which the signal to be printed is being input—VIDEO, S-VIDEO, or RGB (except UP-2300P). Once you have selected the input signal, this setting remains effective until you select another source.
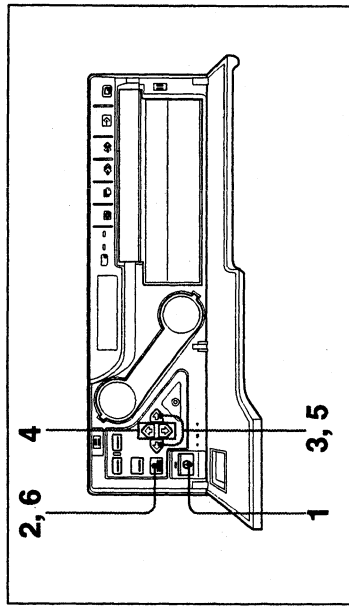
1 Turn on the video monitor and the printer.
The following appears.

Video monitor screen

Q1 A   1   S

Printer window display

Q1 A   1   S
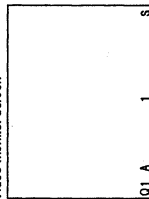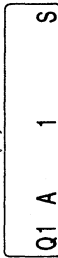
2 Press the MENU button.
The screen previously opened appears.

3 Select IN by pressing the ◇ or ◇ button.

INPUT SETUP
/c/i/p/IN/o/

Display IN in capital letters by pressing the ◇ or ◇ button, INPUT SETUP appears.
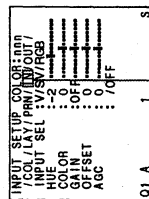
By switching IN to green with the ◇ or ◇ button, INPUT SETUP appears.

4 Select INPUT SEL by pressing the ⇧ or ⇩ button.
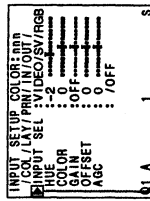
INPUT SEL:
VIDEO/ s v / r

Press the ⇧ or ⇩ button until INPUT SEL appears.
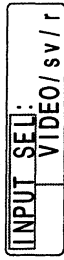
Position the cursor to INPUT SEL by pressing the ⇧ or ⇩ button.

5 Select the input signal by pressing the ◇ or ◇ button.

INPUT SEL:
V/S-VIDEO/ r

Switch the desired input signal to green by pressing the ◇ or ◇ button. The selected input signal turns green and is spelled out.
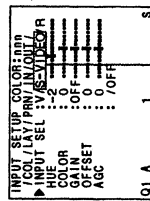
Display the spelled-out input signal by pressing the ◇ or ◇ button. The selected input signal turns green and is spelled out.
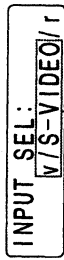
Source signal of the image to be printer	Video monitor and printer window display (the selected input signal is spelled out)
Signal from video equipment connected to the VIDEO INPUT connector	V → VIDEO
Signal from video equipment connected to the S-VIDEO INPUT connector	S → S VIDEO
Signal from video equipment connected to the RGB/SYNC INPUT connectors[a]	R → RGB

a) Models except UP-2300P are equipped with the RGB/SYNC connectors.

6 Press the MENU button.
The regular screen appears.

Making Full-Size Printouts

This section explains how to make a full-size printout. The operations described here constitute the basic procedure for making a printout.

Before making a full-size printout

- All connections should have already been made. (see page 65)
- Ensure that the appropriate ink ribbon cartridge/paper set is being used and that they are correctly loaded. (see pages 9, 12 and 99)
- Select the input signal to be used to make a printout. (see page 14)
- Set the printer to store one full-size image into memory. (see page 32)
- Select the appropriate memory page. (see page 31)

DISPLAY   STOP button   SOURCE/MEMORY button **3 4**
OFF
button
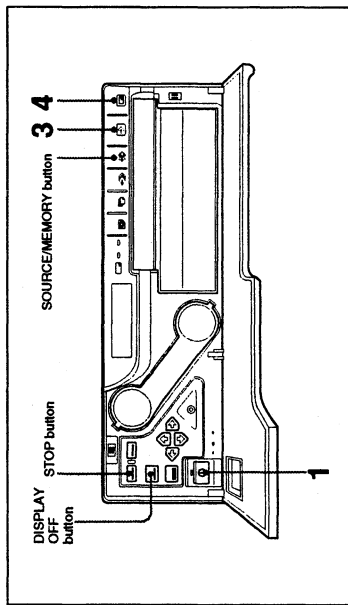
1 Turn on the video monitor and the printer.

2 Start the video source.
This operation is done using the controls of the video equipment acting as the source.

Video monitor screen

Printer window display

Q1 A   1 |S|

Shows that the image from source equipment is displayed on the screen.

---
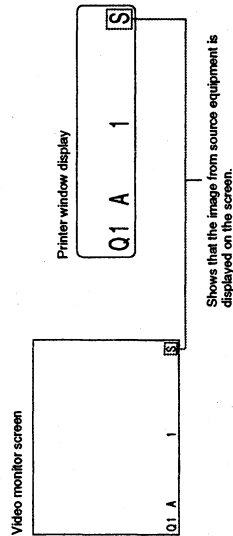
3 Press the CAPTURE button at the instant when the image you want to print appears on the screen.
The image is captured into memory. The memory image is displayed on the screen. Which image appears after this, the source image or memory image, depends on the setting made with AUTO LIVE on the FUNCTION SETUP menu (page 38).

Q1 A   1 |M|

Shows that the image captured in memory is displayed on the monitor.
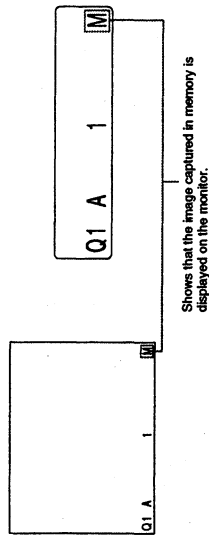
If the stored image is blurred

A quickly moving image may be blurred when printed. Should this occur, change the MEMORY setting to FIELD on the LAYOUT SETUP menu. Although the blur should be eliminated, the ultimate print quality will be slightly degraded.
For details, see page 29.

To change the image in memory

① To display the source image when the memory image is displayed on the screen, press the SOURCE/MEMORY button.
② Press the CAPTURE button at the instant the image you want to print appears. The previous image is replaced with the new one.

Note
If you turn off the power, the image stored in memory will be lost. Should this happen, store the image into memory again after turning on the power. If no image is stored in memory, the printer will not print even if you press the PRINT button.

4 Press the PRINT button.
It takes about 35 seconds to make a printout.
The printout pops out from the paper tray.

|YELLOW PRINTING| |M|
Q1 A   1

The color which is currently being printed is displayed. This indication changes as printing progress.
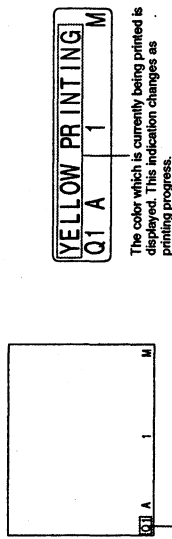
Blinks while printing
During color printing: Printing start - yellow - magenta -
cyan - printing end
During black and white printing: Printing start - white -
printing end
Does not blink while printing

Making Full-Size Printouts (continued)

Note

- Do not turn off the power during printing.
  If you do so, paper may not be ejected and may jam in the printer.
- Do not pull the paper from the paper cover until printing has been completed.
- You can not change the printer application mode or settings on the WINDOW SETUP menu during printing.

To stop printing

Press the STOP button. Printing is abandoned and the paper is ejected to the print tray.

If the printer does not print

The printer will fail to print in the following cases:
- While an error message is displayed on the monitor screen and printer window display.
  — In this case, the paper is ejected without printed even if you press the PRINT button. Proceed as described in "Error/Warning Messages" on page 103.
- Image is not stored in the memory.
  — Image data stored in the memory is lost if you turn off the power. Cature the image into memory again, then press the PRINT button.

When you want to see an image that is hidden below a screen message

Sometimes, a black line appears on the printout, although it does not appear on the video monitor. This black line can be eliminated from the printout. (see "Changing the Printout Size/Printout Area" page 82)

If a black line appears on the printout

Sometimes, a black line appears on the printout, although it does not appear on the video monitor. This black line can be eliminated from the printout. (see "Changing the Printout Size/Printout Area" page 82)

If the image quality of printouts is not satisfactory

You can adjust the image quality of the printouts. (See "Adjusting the Printout Color" pages 75)

Notes

When storing your printouts:
- Avoid storing the printout in a location subject to high temperatures, high humidity, excessive dust and direct sunlight.
- Do not stick tape on a printout. Also, avoid leaving a plastic eraser on a printout or placing a printout in contact with materials which contain plasticizer (under a desk mat, for example).
- Do not allow alcohol or other volatile organic solvents to come into contact with the printouts.

Making Multiple Copies of Identical Printouts

You can make up to 9 copies of identical printouts.
The following two methods are available to set the number of printouts.
- On the menu
- Using the PRINT QTY button. However, you cannot decrease the number of printouts.
The following steps can be performed either before you start printing or while printing. You can change the designated number of copies any time during printing.

Setting the printout quantity on the menu
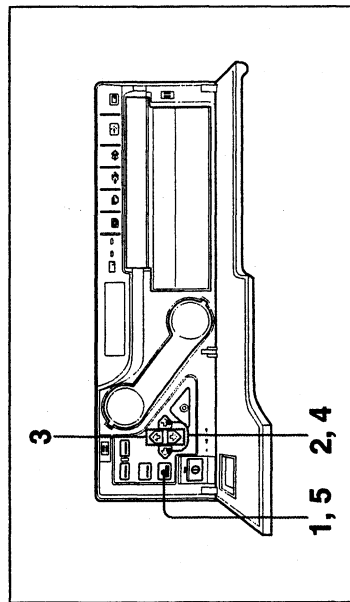
1 Press teh menu botton.
The menu previously opened appears.

2 Select PRN by pressing the ◁ or ▷ button.
The PRINTER SETUP menu arrears.

```
PRINTER SETUP COLOR nnn
▶COL/LAY/PRN/IN/OUT/
PRINT QTY :9 [1-9]
INTERVAL  :OFF/ON
GAMMA     :S/NORMAL/H
SYSTEM    : PRESS[>]
FUNCTION  : PRESS[>]

Q1 A1     2HF           S
```

By switching PRN to green by pressing the ◁ or ▷ button, PRINTER SETUP appears.

```
PRINTER SETUP
/c/l/PRN/i/o/
```

Display PRN in capital letters by pressing the ◁ or ▷ button.

UP-2800 (E)

1-10

Making Full-Size Printouts (continued)

3 Select PRINT QTY by pressing the ⇧ or ⇩ button.

```
PRINTER SETUP  COLOR nnn
►/COL/LA/ PRN/ IN /OUT/
PRINT QTY :9 [1-9]
INTERVAL :OFF/ON
GAMMA :S/NORMAL/H
SYSTEM : PRESS[}]
FUNCTION : PRESS[}]

Q1 A1        2HF        S
```
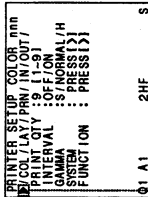
PRINT QTY: 9 [1-9]

Press the ⇧ or ⇩ button until PRINT QTY appears.

Position the cursor to PRINT QTY by pressing the ⇧ or ⇩ button.

4 Set the number of copies by pressing the ⇦ or ⇨ button.

```
PRINTER SETUP  COLOR nnn
►/COL/LA/ PRN/ IN /OUT/
PRINT QTY :9 [1-9]
INTERVAL :OFF/ON
GAMMA :S/NORMAL/H
SYSTEM : PRESS[}]
FUNCTION : PRESS[}]

Q1 A1        2HF        S
```

Quantity of copies
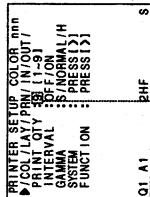
PRINT QTY: 9 [1-9]

Quantity of copies

When setting	Button
To increase the quantity	⇨
To decrease the quantity	⇦

5 Press the MENU button.
The regular screen appears.

Setting the print out quantity by using the PRINT QTY button

1,2
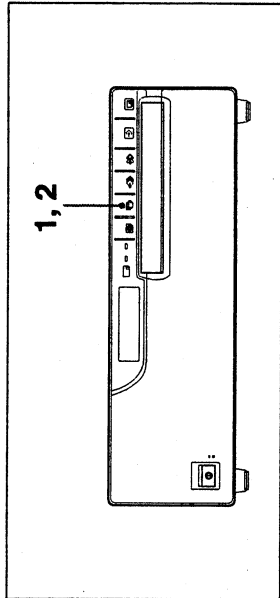
1 Press the PRINT QTY button.
The following screen appears.
If you do not perform any operation after you press the PRINT QTY button, the currently set number of copies appears for 2 or 3 seconds, after which it disappears.

►PRINT QTY 1-9

The currently set number of copies appears within a couple of seconds.
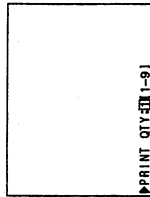
PRINT QTY: 1 [1-9]

The currently set number of copies appears within a couple of seconds.

2 Press the PRINT QTY button until the desired number appears.
Repeatedly pressing the PRINT QTY button increases the quantity up to 9 and stops.

To decrease the number of copies
When decreasing the number of copies, you have to change the number on the menu.

If the paper runs out during printing
Load the paper into the paper tray and press the PRINT button. The printer prints the remaining copies.

Making Full-Size Printouts (continued)

Capturing Another Image While Printing

While the printer is printing, you can capture another image into another memory page to be printed once the printer becomes free. The usable memory pages depend on the type of printouts and settings. (pages 28 and 29)

For UP-2300P/2800P/2900MD, you can capture another image while printing only in field mode.
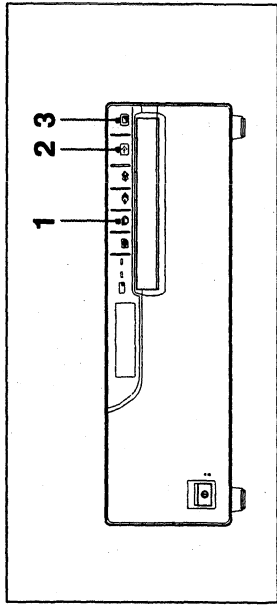
1 Select the desired memory page by pressing the MEMORY PAGE button. Pressing the MEMORY PAGE button switches the memory page.

The available memory pages appear in white.

The currently selected memory page.
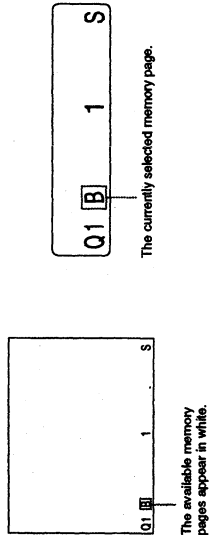
2 Press the CAPTURE button at the instant the image you want to print appears on the screen.

Note
If you press the CAPTURE button to caputwe the image into memor page whose image is being printed, "PLEASE WAIT PRINTING MEMORY" appears and the image cannot be captured.

3 Press the PRINT button.
The image captured in step 2 is queued. The image is printed as soon as all previous printing jobs have been completed.

Memory page whose image has been queued for printing (blinks white on the video monitor)
The memory page display returns to white on the video monitor once printing has been completed.
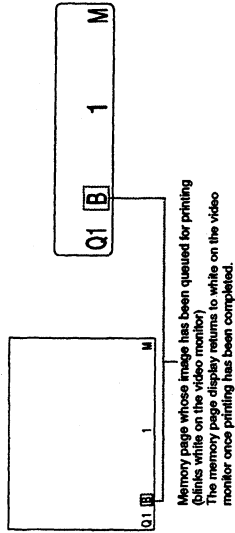
4 To queue another memory page, repeat steps 1, 2 and 3.

Note
Another image cannot be stored into a memory page into which an image has already been queued for printing. In such a case, the "PLEASE WAIT RESERVED MEMORY" appears.

Making Variations of Printouts

You can store various kinds of images into memory and make variations of printouts using the images captured into memory.

Variations of printouts that the printer can produce

The following variations of printout of the images stored in memory can be made.

Printout of a full-size image

ABC

Printout of two reduced images [a]
Capturing the whole screen (only for the UP-2850P/2950MD)

Printout of two reduced images [a]
Capturing the center of the screen

Printout of four reduced images

ABC	123
XYZ	456

Printout of 16 reduced images

Printout for stickers [b]

DEF	DEF
DEF	DEF

Printout of identical images [c]
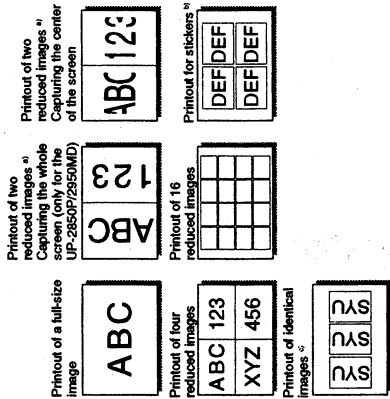
a) For detailed information on the difference on the difference of two types of two-reduced images, see the following "About the printout with two reduced images".
b) There are two types of sticker-printouts.
   One is the printout where all images in one printout are identical. The other is the one where all images in one printout are different.
c) This can be used for identification photograph and there are two types.
   One is the printout where the size of one image in one printout can be adjusted freely. The other is the one where the size of one image is fixed.

About the printout with two reduced images

There are two types of printouts with two reduced images. One type is 2 and the other is 2H in the MULTI PIX items of the LAYOUT SETUP menu.
For the item 2 (only for the UP-2850P/2950MD), the image in the whole screen is captured in memory.
For the item 2H print mode, the image in the center of the screen is captured in memory.

Video monitor

Printout

ABC
123

2 of MULTIPIX

Video monitor

Printout

ABC123

2H of MULTI PIX

The range to be captured
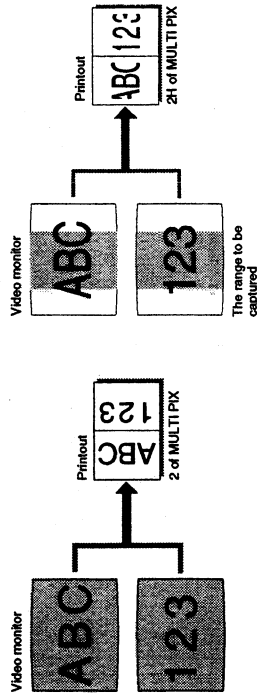
Selecting the Printer Application Mode

The unit allows you to make printouts according to your need, such as regular printouts, printouts for identification photograph and printouts for sticker.
You can select the application mode of the printer on the SYSTEM SETUP menu.
When you use the printer first time, the standard application mode for regular printouts is selected.
Select the application mode according to what kind of printouts you want to make.

1 Press the MENU button.
The menu previouly opened appears.

2 Select PRN by pressing the ⇦ or ⇨ button.
The PRINTER SETUP menu apppears.

```
PRINTER SETUP  COLOR nnn
▶/COL/LAY/DEN IN/OUT/
 PRINT QTY [9 [1-9]
 INTERVAL  :OFF/ON
 GAMMA     :S/NORMAL/H
 SYSTEM    : PRESS[?]
 FUNCTION  : PRESS[?]

 Q1 A1        2HF         S
```

By switching PRN to green by pressing the ⇦ or ⇨ button, PRINTER SETUP appears.

```
PRINTER SETUP
/c/i/PRN/i/o/
```

Display PRN in capital letters by pressing the ⇦ or ⇨ button.

Continue to next page ✦

Making Variations of Printouts (continued)

3 Select SYSTEM by pressing the ⇧ or ⇩ button.

PRINTER SETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
PRINT QTY :9/[1-9]
INTERVAL :OFF/ON
GAMMA :S/NORMAL/H
SYSTEM : PRESS[>]
FUNCTION : PRESS[>]

Q1 A1   2HF   S

SYSTEM : PRESS[>]

Press the ⇧ or ⇩ button until SYSTEM appears.

Position the cursor to SYSTEM by pressing the ⇧ or ⇩ button.

4 Press the ⇨ button.
The SYSTEM SETUP menu appears.

SYSTEM SETUP COLOR nnn
PRN SETUP : PRESS [>]
LCD-CNTR. : 5
BAUDRATE : /24/4800/96
BEEP :OFF/ON
APPLI. : STANDARD/

Q1 A1   2HF   S

SYSTEM SETUP

5 Select APPLI. by pressing the ⇧ or ⇩ button.

SYSTEM SETUP COLOR nnn
PRN SETUP : PRESS [>]
LCD-CNTR. : 5
BAUDRATE : /24/4800/96
BEEP :OFF/ON
APPLI. : STANDARD/

Q1 A1   2HF   S

APPLI. : STANDARD /

Press the ⇧ or ⇩ button until APPLI. appears.

Position the cursor to APPLI. by pressing the ⇧ or ⇩ button.

6 Select the desired application mode by pressing the ⇦ or ⇨ button.
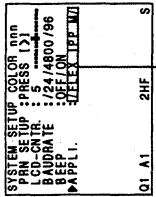
SYSTEM SETUP COLOR nnn
PRN SETUP : PRESS [>]
LCD-CNTR. : 5
BAUDRATE : /24/4800/96
BEEP :OFF/ON
▶APPLI. : FLEX IPP M/

Q1 A1   2HF   S

APPLI. : FLEX IPP M /

Display the desired mode in capital letters by pressing the ⇦ or ⇨ button.

Switch the desired mode to green by pressing the ⇦ or ⇨ button.

Application mode	Printout
Standard	Printout with a full-size image, two different reduced images[a], four different reduced images and 16 different reduced images
FLEX IPP[a]	Printout with identical images of the desired size
FIXED IPP	Printouts of a full-size image, four identical reduced images and 16 identical reduced images
STICK DIF	Sticker-type printouts with different reduced images
STICK DUP	Sticker-type printouts with identical reduced images

a) There are two types: One is "Z" and the other is "2H". "Z" is only for UP-2850P/2950MD.
b) As unit of the image size, either "mm" or "inches" can be selected.

7 Select PRN SETUP by pressing the ⇧ or ⇩ button.

8 Press the ⇨ button.
The PRINTER SETUP menu appears.

9 Press the MENU button.
The regular screen appears.

Note
Chaning the application mode results in clearing images stored in all of memory pages.

1-14

Making Variations of Printouts (continued)

About the Memory

To make printouts, it is first necessary to capture the image into memory.
When capturing the image, there are two ways to use the memory, one is frame mode and the other is field mode.
Frame mode: A image is captured in one memory.
Field mode: A memory is divided into two, and images can be captured in each.
A memory in which an image is captured is called memory page in this manual.
The number of usable memory pages depends on the type of the selected reduced images and memory mode.

Printer	Reduced image	Memory mode	Number of memory pages
UP-2850P/2950MD	1/2H/2/4/16	Frame	4 (A,B,C,D)
	1/2H/2	Field	8 (A1, A2, B1, B2, C1, C2, D1, D2)
UP-2300P/2800P/2900MD	1/2H/4/16	Frame	1 (A)
	1/2H	Field	2 (A1, A2)

When you select four-reduced image mode or 16-reduced image mode, the unit selects automatically frame mode regardless of the setting of MEMORY on the LAYOUT SETUP menu.

In frame mode

Video monitor

Q1 A   1   S

ABC

The image displayed in the left video monitor is captured in the memory page A.

Printout

ABC

A still subject can be printed with high resolution.

In field mode

Video monitor

Q1 A1   1   S

123

The image displayed in the left video monitor is captured in the memory page A1.

Printout

123

A quickly moving subject can be printed without blurring.
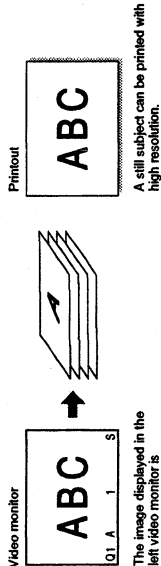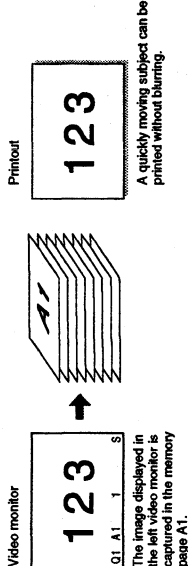
The above illustrations show the case of UP-2850P/2950MD. In case of UP-2300P/2800P/2900MD, there is one memory page in frame mode and two memory page in field mode.

Selecting the memory mode

Note
You can select the desired memory page only when 1, 2 or 2H is selected in STANDARD mode.
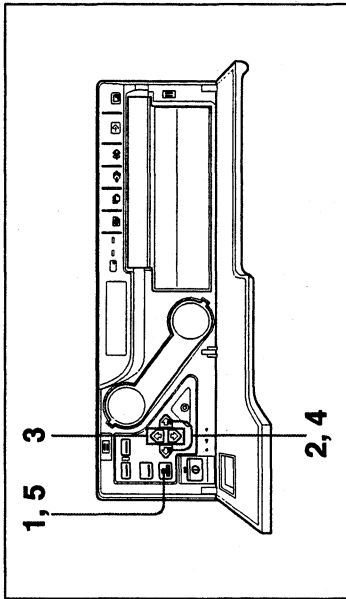
1, 5   3

2, 4

1 Press the MENU button.
The menu just before opened appears.

2 Select LAY by pressing the ⇦ or ⇨ button.

```
LAYOUTSETUP COLOR nnn
▶/COL /LAY/ PRN/ IN/ OUT/
MULTI PIX :FRAME/FIELD
MEMORY :1/2H/2/4/16
SEPARATE :OFF/ON
WINDOW : PRESS[?]
CAPTION : PRESS[?]

Q1 A1      2HF           S
```

By switching LAY to green by pressing the ⇦ or ⇨ button, LAYOUT SETUP appears.

```
LAYOUTSETUP
/c/[LAY/ p / i / o/
```
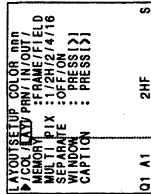
Display LAY in capital letters by pressing the ⇦ or ⇨ button.

Making Variations of Printouts (continued)

3 Select MEMORY by pressing the ⇧ or ⇩ button.

```
LAYOUTSETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
▶MEMORY    :FRAME/FIELD
 MULTI PIX :1/2H/2/4/16
 SEPARATE  :OFF/ON
 WINDOW    : PRESS{ }
 CAPTION   : PRESS{ }

Q1 A1    2HF              S
```

Position the cursor to MEMORY by pressing the ⇧ or ⇩ button.

```
MEMORY   :
FRAME/field
```

Press the ⇧ or ⇩ button until MEMORY appears.

4 Select the desired memory mode by pressing the ◁ or ▷ button.

```
LAYOUTSETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
▶MEMORY    :FRAME/FIELD
 MULTI PIX :1/2H/2/4/16
 SEPARATE  :OFF/ON
 WINDOW    : PRESS{ }
 CAPTION   : PRESS{ }

Q1 A1    2HF              S
```

Switch the desired memory mode to green by pressing the ◁ or ▷ button.

```
MEMORY   :
FRAME/field
```

Display the desired memory mode in capital letters by pressing the ◁ or ▷ button.

Frame: We recommend that, whenever possible, you print in this mode.
Field: Select this mode to reduce blurring when you print a quickly moving image.

5 Press the MENU button.
The regular screen appears.

MEMORY PAGE button

Selecting a memory page
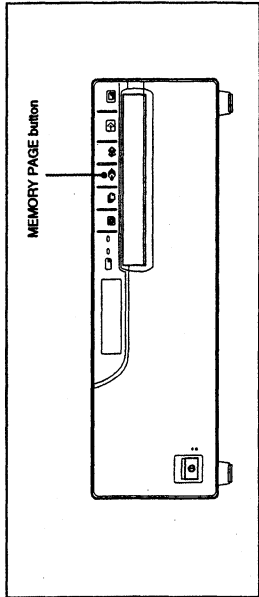
To select a memory page, press the MEMORY PAGE button.

```
        1          S


Q1 ⊞
```

```
Q1 |C|           S
```

Press the MEMORY PAGE button as many times as the necessary until the desired memory page appears.

Note
The memory page whose image is being printed is blinking on the video monitor screen. Even if you select this blinking page, you cannot capture the image in this page.

Making Variations of Printouts (continued)

Making a Printout of Multiple Different Reduced Images

You can store multiple images into a memory page and make a printout with those reduced images. This section explains how to make a printout with multiple reduced images.

A printout having multiple reduced images is done by following the procedure below.

- Determining the number of reduced images. (on this page)
- Selecting how to capture the images into memory (page 36)
- Setting the printer application mode to STANDARD (page 25)

Selecting the number of reduced images to be captured in memory
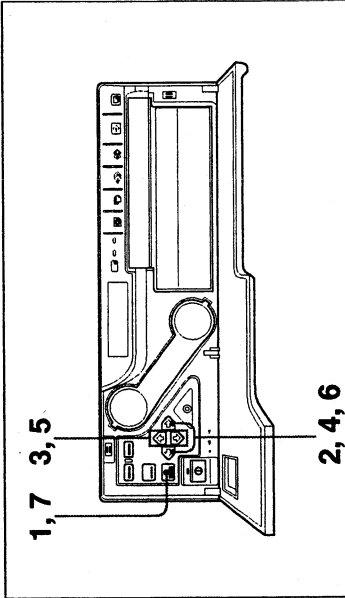
1, 7   3, 5

2, 4, 6

1 Press the MENU button.
The menu just before opened appears.

2 Select LAY by pressing the ⇦ or ⇨ button.

```
LAYOUTSETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
MEMORY   :FRAME/FIELD
MULTI PIX :1/2H/2/4/16
SEPARATE  :OFF/ON
WINDOW    : PRESS[}]
CAPTION   : PRESS[}]

Q1 A1      2HF              S
```

By switching LAY to green by pressing the ⇦ or ⇨ button, LAYOUT SETUP appears.

```
L A Y O U T S E T U P
/ c /LAY/ p / i / o /
```
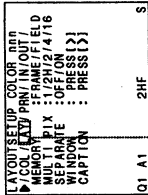
Display LAY in capital letters by pressing the ⇦ or ⇨ button.

---

3 Select MULTI PIX by pressing the ⇧ or ⇩ button.

```
LAYOUTSETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
MEMORY   :FRAME/FIELD
MULTI PIX :1/2H/2/4/16
SEPARATE  :OFF/ON
WINDOW    : PRESS[}]
CAPTION   : PRESS[}]

Q1 A1      2HF              S
```

Position the cursor to MULTI PIX by pressing the ⇧ or ⇩ button.

```
MULTI PIX :
          1 /--/-/-/
```
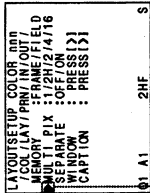
Press the ⇧ or ⇩ button until MULTI PIX appears.

4 Select the desired type of reduced-images printout by pressing the ⇦ or ⇨ button.

```
LAYOUTSETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
MEMORY   :FRAME/FIELD
►MULTI PIX :1/2H/2/4/16
SEPARATE  :OFF/ON
WINDOW    : PRESS[}]
CAPTION   : PRESS[}]

Q1 A1      2HF              S
```

Switch the desired type of reduced-image printout to green by pressing the ⇦ or ⇨ button.

```
MULTI PIX :
          -/2H/-/-/--
```

Display the desired type of reduced-image printout by pressing the ⇦ or ⇨ button.

Displayed type	Number of reduced images
1	1 (Full-size image)
2H	2 (Two reduced images around the center of the screen)
2	2 (Two reduced images of the whole screen) (only for UP-2850P/2950MD)
4	4 (Four reduced images)
16	16 (16 reduced images)

To make a printout of reduced images with white borders, go to step 5.
To make a printout without white borders, skip step 5 and go to step 7.

Continue to next page →

Making Variations of Printouts (continued)

5 Select SEPARATE by pressing the ⇧ or ⇩ button.

```
LAYOUTSETUP COLOR nnn
/COL/LAY//PRN/IN/OUT/
MEMORY      :FRAME/FIELD
MULTI PIX   :1/2H/2/4/16
SEPARATE    :OFF/ON
WINDOW      : PRESS[?]
CAPTION     : PRESS[?]

Q1 A1      2HF          S
```

```
SEPARATE  :  off /ON
```

Press the ⇧ or ⇩ button until SEPARATE appears.
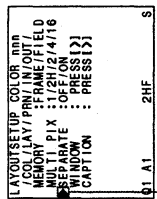
Position the cursor to SEPARATE by pressing the ⇧ or ⇩ button.

Note

In the LAYOUT SETUP menu, if items such as MEMORY and SEPARATE are not effective, the application mode other than the STANDARD mode is selected. In such a case, select the STANDARD mode in the SYSTEM SETUP menu first.

6 Select whether the images are printed with or without white borders by pressing the ⇦ or ⇨ button.

When you select	Settings
Printouts without white borders	OFF
Printouts with white borders	ON

```
LAYOUTSETUP COLOR nnn
/COL/LAY//PRN/IN/OUT/
MEMORY      :FRAME/FIELD
MULTI PIX   :1/2H/2/4/16
SEPARATE    :OFF/ON
WINDOW      : PRESS[?]
CAPTION     : PRESS[?]

Q1 A1      2HF          S
```

```
SEPARATE  :  off /ON
```

Display the desired mode by pressing the ⇦ or ⇨ button.
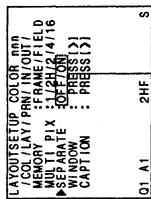
Switch the desired mode to green by pressing the ⇦ or ⇨ button.

7 Press the MENU button.
The regular screen appears.
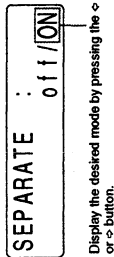
To select the desired type of reduced-image printout using the MULTI PICTURE button

You can select the number of reduced images using the MULTI PICTURE button on the front panel.
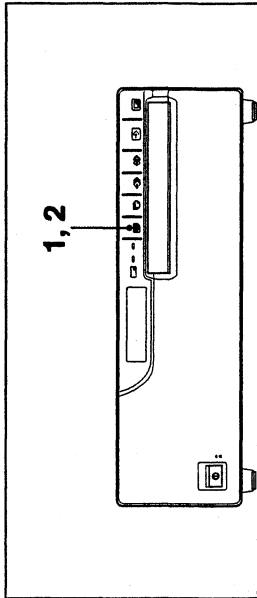
1 Press the MULTI PICTURE button.
The current setting appears. The video monitor screen is reset to the regular screen after a few seconds.

```
MULTI PIX  :
          1/--/-/--
```

The currently selected type of reduced-image printout is displayed.

```
MULTI PIX  1/2H/2/4/16
```
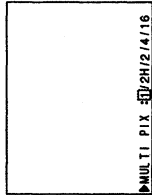
The currently selected type of reduced-image printout is lit green.

2 Press the MULTI PICTURE button until the desired type of reduced-image printout appears.
Repeatedly pressing the MULTI PICTURE button switches the type of reduced-image printout

For detailed information on the type of reduced-image printout, see "Selecting the number of reduced images to be captured in memory". (page 32)

Making Variations of Printouts (continued)

Selecting how to capture the images

You can select how to capture the images by using the PRINTER SETUP menu and FUNCTION SETUP menu.
- Storing only the image currently displayed on the video monitor screen or storing images sequentially to all reduced-image positions of a memory page at regular intervals.
- Deciding the image the printer displays on the video monitor screen after capturing the image.

1, 9, 3, 5, 7, 6

2, 4, 8

1 Press the MENU button.
The menu just before opened appears.

2 Select PRN by pressing the ◁ or ◇ button.

By switching PRN to green by pressing the ◁ or ◇ button, PRINTER SETUP appears.

```
PRINTER SETUP
/c/I/PRN/i/o/
```

Display PRN in capital letters by pressing the ◁ or ◇ button.

3 Select INTERVAL by pressing the ↑ or ↓ button.

Position the cursor to INTERVAL by pressing the ↑ or ↓ button.

```
INTERVAL : OFF/on
```

Press the ↑ or ↓ button until INTERVAL appears.

4 Select the desired method for storing images by pressing the ◁ or ◇ button.

When you select	Setting
To capture only the image currently displayed on the video monitor screen by pressing the CAPTURE button.	OFF
To capture images sequentially to all positions of a memory page at regular intervals by pressing the CAPTURE button.	ON

Switch the desired mode to green by pressing the ◁ or ◇ button.

```
INTERVAL : OFF/on
```

5 Select FUNCTION by pressing the ↑ or ↓ button.

Position the cursor to FUNCTION by pressing the ↑ or ↓ button.

```
FUNCTION : PRESS[>]
```

Press the ↑ or ↓ button until FUNCTION appears.

Making Variations of Printouts (continued)

6 Press the ⬦ button.
The FUNCTION SETUP menu appears.

FUNCTION SETUP

```
FUNCTION SETUP COLOR:nnn
▶PRN SETUP :PRESS [>]
 AUTO LIVE :OFF/ON
 IMMED.CAP :OFF/ON
 RM2 FUNC :PRINT/
 CLEAR     :/OFF

Q1 A1    2HF          S
```

7 Select AUTO LIVE by pressing the ⬆ or ⬇ button.

```
FUNCTION SETUP COLOR:nnn
 PRN SETUP :PRESS [>]
▶AUTO LIVE :OFF/ON
 IMMED.CAP :OFF/ON
 RM2 FUNC :PRINT/
 CLEAR     :/OFF

Q1 A1    2HF          S
```

Position the cursor to AUTO LIVE by pressing the ⬆ or ⬇ button.

AUTO LIVE : OFF/on
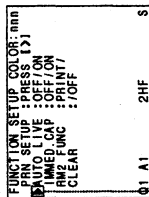
Press the ⬆ or ⬇ button until AUTO LIVE appears.

8 Select which the image appears on the video monitor after the image is captured by pressing the ⬦ or ⬦ button.

When you select	Setting
The image captured in memory appears just after the printer captures the image, and the memory image remains on the video monitor screen.	OFF
The image stored in memory appears just after the printer captures the image, then after a few seconds, the source memory appears, whenever you press the CAPTURE button.	ON
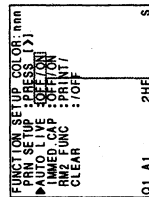
AUTO LIVE : OFF/on

Display the desired mode in capital letters by pressing the ⬦ or ⬦ button.

```
FUNCTION SETUP COLOR:nnn
 PRN SETUP :PRESS [>]
▶AUTO LIVE :OFF/ON
 IMMED.CAP :OFF/ON
 RM2 FUNC :PRINT/
 CLEAR     :/OFF

Q1 A1    2HF          S
```

Switch the desired mode to green by pressing the ⬦ or ⬦ button.

9 Press the MENU button.
The regular screen appears.

To return to the PRINTER SETUP menu

In step 9, position the cursor to PRN SETUP and press the ⬦ button.
The PRINTER SETUP menu appears again.

Making a Printout with Multiple Reduced Images

This subsection explains how to make printouts of multiple reduced images taking, as an example, the making of a printout of four reduced images.

Before making the printout of four reduced images

- Select the type of the four-reduced image and whether to put the white borders a).
 (see page 32)
- Select the appropriate memory page. (see page 31)
- Set how to capture images into the memory page and select which image will appear after the image has been stored into memory, the memory image or source image. (see page 36)

a) When the type of four reduced images or 16 reduced images is selected, the frame mode is automatically selected.
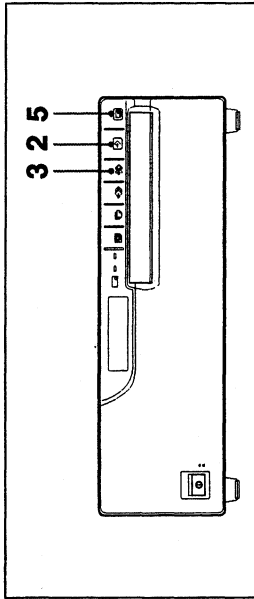
1 Start the video source.
This operation is done using the controls of the video equipment acting as the source.

Blinks green to indicate that an image will be captured here.

```
C
Q1 A    4F          S
```

The memory page into which four reduced images are captured.

Type of multiple reduced images

Indicates that the images from video equipment is displayed on the screen.

Indicates that the white borders are attached around images.

1-20

UP-2800 (E)
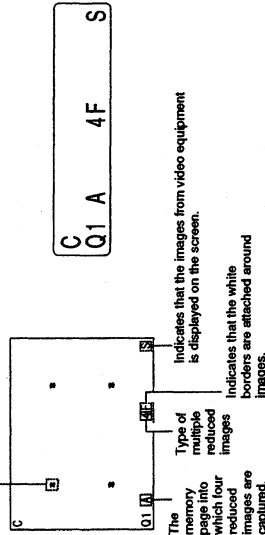
Making Variations of Printouts (continued)

2 Press the CAPTURE button at the instant the image you want to print appears on the screen.

The image has been stored to the star (*) that blinked green on the video monitor screen or the position number displayed on the printer window display in step 1.

The green blinking star (referred to as the cursor) on the monitor moves to the next position and the number the printer window display advances by 1.

The blinking green cursor moves.

Nothing changes in the printer window display.
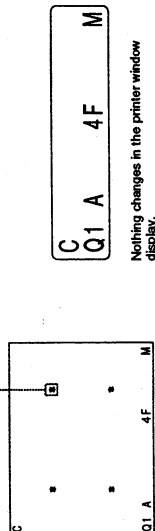
At this time, the image captured in memory is displayed on the video monitor screen. However, the image to be displayed after a few seconds depends on the setting of AUTO LIVE in the FUNCTION SETUP menu. (see page 38)

Go to step 3 when the memory image remains on the video monitor screen.
Go to step 4 when the source image is displayed.

3 Press the SOURCE/MEMORY button.
The source image appears on the video monitor screen.

4 Repeat steps 2 and 3 until you have captured four images when the memory image remains on the video monitor screen.
Repeat step 2 until you have captured four images when the source image appears on the video monitor screen.

To replace a captured image
Example: When you want to change the image stored to the third position.

① Select the third position where there is the image which you want to replace by pressing the ⬆, ⬇, ⬅ or ➡ button.
Pressing the ⬆, ⬇, ⬅ or ➡ button moves the cursor one position vertically or horizontally.
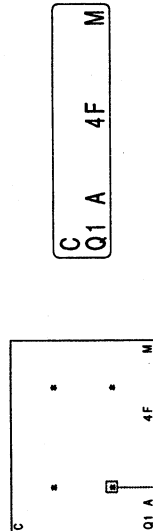
Press the ⬆, ⬇, ⬅ or ➡ button untill the third cursor blinks green.

---

② Start the video source.
If the memory image is displayed, press the SOURCE/MEMORY button to display the source image.

③ Press the CAPTURE button at the instant the image you want to print appears.
The previously stored image is replaced with the newly stored image.

To skip a previously captured image
When an image has already been captured, the previously captured image can be replaced by pressing the CAPTURE button.
Skip the corresponding image by pressing the ⬆, ⬇, ⬅ or ➡ button.

To capture images automatically
Images can be stored in all of the memory pages according to setting made for INTERVAL of the PRINTER SETUP menu to ON. (see page 36)

5 Press the PRINT button.
The four reduced images are printed on one sheet of paper.

Making a printout with an Insert

You can make printouts with an insert which is reduced image.
Example: To make a printout with one of four reduced images inserted.
The operation to make a printout with one of 16 reduced images is the same.

1 Display the full-size image stored in memory. (Follow steps 1 to 3 of "Making Full-Size Printouts" on page 16.)

2 Set the multiple reduced image type to 4 (without white borders).
(See "Selecting the number of reduced images to be captured in memory" on page 32.)

3 Capture the image to be inserted.
① Select the position where a reduced image is to be inserted by pressing the ⬆, ⬇, ⬅ or ➡ button.

Move the green cursor to the position where the reduced image is inserted.
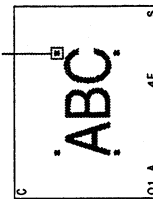
② Press the CAPTURE button at the instant the image you want to insert appears.
The image is captured to the position selected in step ①.

4 Press the MULTI PICTURE button.
The full-size image with an insert appears on the video monitor.

5 Press the PRINT button.
The image with an insert is printed.

Making Variations of Printouts (continued)

Making Printouts for Stickers

The unit supports application modes such as STICK DUP or STICK DIF that allows you to make a printout for a sticker.
• STICK DUP application mode allows you to make a printout with four or 16 identical reduced images.
• STICK DIF application mode allows you to make a printout with four or 16 different reduced images.
For details of how to select the STICK DUP or STICK DIF application mode, see "Selecting the Printer Application Mode" on page 25.

Also, you have to use the following ink ribbon cartridge and paper for stickers
• UPC-20S16E print pack for sticker with 16 reduced images
• UPC-20S04E print pack for sticker with four reduced images
For detailed information on the print pack, see "Ink Ribbon Cartridge and Paper" on page 99.

Before making a printout for a sticker
• Select either the STICK DUP or STICK DIF application mode (see page 25)
• Select the type of the multiple reduced images, that is 4 or 16 (see page 32).
The procedure for selecting the number of reduced images is the same as that in standard application mode.
However, in the LAYOUT SETUP menu it is different. You cannot select the MEMORY mode, and SEPARATE is automatically set and fixed to the one with white borders.
• Select the appropriate memory page. (see page 31)

About the memory mode
You are not allowed to select the memory mode. The memory mode is automatically set to either frame or field.

To make a printout for a sticker, proceed as follows.
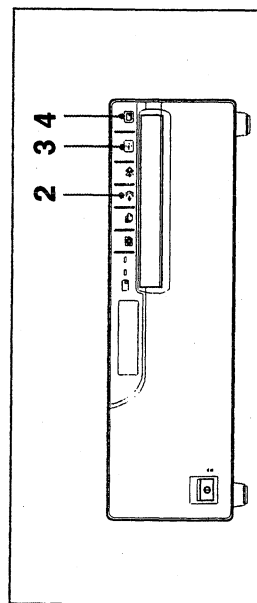
1 Start the video source.
This operation is done using the controls of the video equipment acting as the source.

2 Select the memory page by pressing the MEMORY PAGE button.

3 Capture the image in memory.
When STICK DIF 4 or STICK DIF 16 is selected: Press the CAPTURE button at the instant the image you want to print appears on the screen. Repeatedly capture the remaining images by pressing the CAPURE button.
When STICK DUP 4 or STICK DUP 16 is selected: Press the CAPTURE button at the instant the image you want to print appears on the screen. The full-size memory image is displayed on the video monitor screen. Four or 16 reduced images will be printed on one sheet of paper.

4 Press the PRINT button.
The multiple reduced images are printed on one sheet of sticker paper.

Making Printouts for Identification Photographs

The unit supports the application modes such as FLEX IPP and FIX IPP that allow you to make a printout for identification photographs.
• FLEX IPP application mode allows you to make a printout with identical images of the desired size. The number of identical images is automatically calculated according to the size that you have set.
• FIXED IPP application mode allows you to make a printout with a full-size image, or identical multiple reduced images.[a]
a)The number of reduced images depends on your TV system. (see page 49)

About printing pack and paper tray
To make printouts for identification photographs in FILL IPP or FIXED IPP mode, it is recommended to use the UPC-2040A Self-Laminating Color Printing Pack (not supplied) specially designed for this mode. The printout of this type paper is well preserved.
Also, the paper size of this type is a little larger than that of others. Thus, the supplied paper tray is too small to load paper.
The UPA-2002 (not supplied) is required.
For detailed information, contact your Sony dealer.

Making printouts for identification photographs of a desired size

The FLEX IPP application mode allows you to select the size of one image. The number of images in a single printout depends on the set size.
This section explains how to set the size and register it to the LOAD SIZE number.

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Making Variations of Printouts (continued)

■ To decide the size

The sizes can be registered as LOAD SIZE number 1, 2 and 3. The printer retains these sizes even if you turn off the printer power. Once you have set the typical size of the photograph, you can make the identification photograph with the desired size very easily.

Before starting
Set the application mode to FLEX IPP. (see page 25)

1 Press the MENU button.
The menu just before opened appears.

2 Select LAY by pressing the ⇦ or ⇨ button.

```
LAYOUTSETUP COLOR:nnn
▶/COL/LAY/PRN/IN/OUT/
MEMORY      :FRAME/FIELD
MULTI PIX  :2H/2/4/16
SEPARATE   :OFF/ON
WINDOW     :PRESS[>]
CAPTION    :PRESS[>]

Q1 A1          2HF      S
```

```
LAYOUTSETUP
/c/|LAY|/p/i/o/
```

Display LAY in capital letters by pressing the ⇦ or ⇨ button.

By switching LAY to green by pressing the ⇦ or ⇨ button, LAYOUT SETUP appears.

3 Select WINDOW by pressing the ⇧ or ⇩ button.

```
LAYOUT SETUP COLOR
/COL/LAY/PRN/IN/OUT/
MEMORY      :FRAME/FIELD
MULTI PIX  :1/2H/2/4/16
SEPARATE   :OFF/ON
▶WINDOW     : PRESS[>]
CAPTION    : PRESS[>]

Q1 A1          2*2      S
```

```
WINDOW   :  PRESS[>]
```

Position the cursor to WINDOW by pressing the ⇧ or ⇩ button.

Press the ⇧ or ⇩ button until WINDOW appears.

4 Press the ⇨ button.
The WINDOW SETUP menu appears.

```
WINDOW SETUP
```

5 Select LOAD SIZE by pressing the ⇧ or ⇩ button.

```
WINDOW SETUP COLOR:nnn
▶LAY SETUP :PRESS[>]
 LOAD SIZE :1/2/3
 H WIDTH   :035mm
 V WIDTH   :045mm
 SAVE SIZE :1/2/3[EXEC]

Q1 A          2*2      S
```

```
LOAD SIZE  :
           1/-/-
```

Position the cursor to LOAD SIZE by pressing the ⇧ or ⇩ button.

Press the ⇧ or ⇩ button until LOAD SIZE appears.

6 Select the desired LOAD SIZE number to be registered or modified by pressing the ⇦ or ⇨ button.

```
WINDOW SETUP COLOR:nnn
▶LAY SETUP :PRESS[>]
 LOAD SIZE :1/2/3
 H WIDTH   :035mm
 V WIDTH   :045mm
 SAVE SIZE :1/2/3[EXEC]

Q1 A          2*2      S
```

```
LOAD SIZE  :
           1/-/-
```

Switch the desired LOAD SIZE number to green by pressing the ⇦ or ⇨ button.

Display the desired LOAD SIZE number by pressing the ⇦ or ⇨ button.

When modifying, you can preserve the original settings. (See "To retain the originally set value" on page 47.)

Making Variations of Printouts (continued)

7 Decide the size.

Display the source image on the video monitor and decide the size as watching the image trimmed according to the size.

Wide (determined by the setting of H WIDTH)

Height (determined by the setting of V WIDTH)

The image is trimmed according to the size.
The image of this part is captured in the memory and printed.
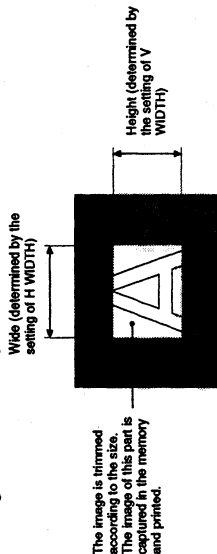
① Select the direction to be adjusted by pressing the ⇧ or ⇩ button.
② Adjust the size of the direction selected in ① by pressing the ⇦ or ⇨ button.

① Display the direction to be adjusted by pressing the ⇧ or ⇩ button.

```
H WIDTH : 35 mm

V WIDTH : 45 mm
```
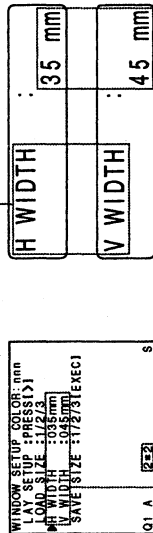
② Then display the desired size by pressing the ⇦ or ⇨ button.

```
WINDOW SETUP COLOR:nnn
 LAY SETUP :PRESS1>1
 LOAD SIZE :1/2/3
 H WIDTH   :035mm
 V WIDTH   :045mm
 SAVE SIZE :1/2/3[EXEC]

Q1 A   2×2                    s
```

The number of images to be printed in one sheet of paper is automatically calculated and displayed according to the set size.
① Position the cursor to the direction to be adjusted by pressing the ⇧ or ⇩ button, then
② adjust the size by pressing the ⇦ or ⇨ button.

The following table shows examples of the size and the number of images in a single printout.

Size (unit: mm) (w × h)	Number of images
35 × 45	4
45 × 35	3
51 × 51	2

8 Select SAVE SIZE by pressing the ⇧ or ⇩ button.

```
WINDOW SETUP COLOR:nnn
 LAY SETUP :PRESS1>1
 LOAD SIZE :1/2/3
 H WIDTH   :035mm
 V WIDTH   :045mm
▶SAVE SIZE :1/2/3[EXEC]

Q1 A   2×2
```

Position the cursor to SAVE SIZE by pressing the ⇧ or ⇩ button.

```
SAVE SIZE : 1/-/-[EXEC]
```
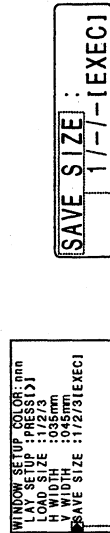
Press the ⇧ or ⇩ button until SAVE SIZE appears.

9 Select the SAVE SIZE number to which new settings are to be stored by pressing the ⇦ or ⇨ button.

```
WINDOW SETUP COLOR:nnn
 LAY SETUP :PRESS1>1
 LOAD SIZE :1/2/3
 H WIDTH   :035mm
 V WIDTH   :045mm
▶SAVE SIZE :1/2/3[EXEC]

Q1 A   2×2
```

Display the desired SAVE SIZE number by pressing the ⇦ or ⇨ button.

```
SAVE SIZE : -/2/-[EXEC]
```
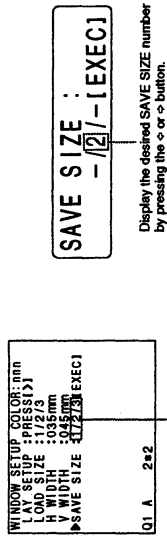
Switch the desired SAVE SIZE number to green by pressing the ⇦ or ⇨ button.

To retain the originally set value
Select a SAVE SIZE number which is different from the LOAD SIZE number selected in step 6.

10 Press the EXEC button.
The set size is registered to the SAVE SIZE number selected in step 9.

To return to the previous screen
Select the LAYOUT SETUP by pressing the ⇧ or ⇩ button, then press the ⇦ or ⇨ button.
The LAYOUT SETUP menu appears.

To return to the regular screen
Press the MENU button.

■ To make a printout with identical images of the desired size

Before making printouts with identical images of the desired size
• Select the application mode FLEX IPP. (page 25)
• Decide the size of one image. (page 44)
• Prepare the UPC-2040A Self-Laminating Printing Pack
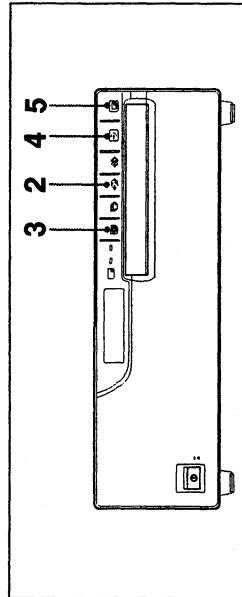
1 Start the video source.
This operation is done using the controls of the video equipment acting as the source.

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Making Variations of Printouts (continued)

2 Select the memory page by pressing the MEMORY PAGE button.

3 Load the desired size by pressing the MULTI PICTURE button.
By pressing the MULTI PICTURE button, ▶LOAD SIZE: 1/2/3 appears.
Each time you press the MULTI PICTURE button, the LOAD SIZE number to be loaded changes.

▶LOAD SIZE 1/2/3

Change the LOAD SIZE number in which the desired size setting is registered green.

LOAD SIZE
1/-/-[EXEC]

Display the LOAD SIZE number in which the desired size setting is registered.

▶LOAD SIZE: 1/2/3 disappears after a few seconds if you do not perform any operation.

Q1 A 2*2   S

Displays the number of images to be printed in one sheet of paper according to the size set in step 3.

When you want to make a printout of images of the different size
Set the size in step 3 instead of loading the LOAD SIZE number. (See "To decide the size" on page 44.)

4 Press the CAPTURE button at the instant the image you want to print appears on the screen.
The number of images corresponding to the selected size are copied and captured in the selected memory page.

To replace a stored image
① When the memory image remains on the video monitor screen, press the SOURCE/MEMORY button to display the source image.

② Press the CAPTURE button at the instant the image you want to print appears.
The previously copied identical images are replaced with the newly captured copied images.

5 Press the PRINT button.
The identical reduced images of the same size are printed in a single printout.

Making printouts for identification photograph with the fixed-size image

The printer allows you to make a printout with a full-size image, identical multiple reduced images in FIXED IPP application mode.
You can select the number of identical reduced images on the menu in the LAYOUT SETUP menu, but the number of reduced images depends on your TV system.
• PAL TV system: FIXED IPP 1/4/9/16 are selectable.
• NTSC TV system: FIXED IPP 1/4/16 are selectable.

Before making printouts for identification photograph with the fixed-size image
• Select the application mode FIXED IPP. (page 25)
• Decide the number of images. (page 32)
• Prepare the UPC-2040A Self-Laminating Printing Pack
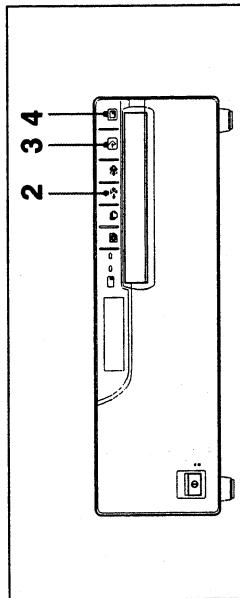
1 Start the video source.
This operation is done using the controls of the video equipment acting as the source.

2 Select the memory page by pressing the MEMORY PAGE button.

3 Press the CAPTURE button at the instant the image you want to print appears on the screen.

To replace a stored image
① When the memory image remains on the video monitor screen, press the SOURCE/MEMORY button to display the source image.

② Press the CAPTURE button at the instant the image you want to print appears.
The previously copied identical images are replaced with the newly captured copied images.

4 Press the PRINT button.
The identical reduced images of the same size are printed in a single printout.

Making Printouts With a Caption

A caption, such as data or comments, can be added to a printout below the image. You can input up to 48 characters.

About the CAPTION menu

A caption is entered from the CAPTION menu. You can input caption in any printer application mode and make a printout with a caption.

A brief explanation of each item of the CAPTION menu is given below.

Character display area
The cursor lit green indicates the position where a character can be entered. The entered characters are displayed here.

ON: displayed when printing with a caption
OFF: displayed when printing without a caption (OFF is displayed as the factory-setting)

Indicates the character selected in the character entry area (highlighted green).

The position to be input is blinking.

CAPTION [ON]

ABCDEFGHIJKLMN
OPQRSTUVWXYZ
0123456789+-=%
'"*.,;:()[]<>?

C. [ON] [<A>] [01]

Character entry area
The character or symbol where the cursor is placed is highlighted green and this highlighted character is to be entered.

Symbols and words can be used to enter a caption.

Symbols and words can be used to enter a caption

Monitor display	Function
ins	Inserts one character without erasing the highlighted character.
del	Deletes a highlighted character and characters back by one.
spc	Puts one space at the position of the highlighted character as erasing that character. One space is left.
off	Selects to print without a caption.
on	Selects to print with a caption.
exit	Returns from the CAPTION menu to LAYOUT SETUP menu.
Sft[a]	Selects either capital letters or lower-case letters.

a) By highlighting Sft green and pressing the EXEC button, capital letters are changed to lower-case letters, or lower-case letters are changed to capital letters in the character entry area.

Entering a Caption

Enter a caption as follows. The setting remains effective until you enter a new setting - even if you turn the power off.

Notes
• If you turn off the power of the printer without returning to the LAYOUT SETUP menu or regular screen, the entered characters are cleared.
• During printing, you cannot enter or edit caption in the CAPTION menu.

1 Press the MENU button.
The menu just before opened appears.

2 Select LAY by pressing the ◇ or ◇ button.

LAYOUTSETUP COLOR nnn
▶/COL/LAY/ PRN/IN/OUT/
MEMORY   :FRAME/FIELD
MULTI PIX :1/2H/2/4/16
SEPARATE :OFF/ON
WINDOW   : PRESS[?]
CAPTION   : PRESS[?]

Q1 A1   2HF   S
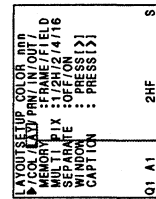
By switching LAY to green by pressing the ◇ or ◇ button, LAYOUT SETUP appears.

LAYOUTSETUP
/ c /LAY/ P / i / o /

Display LAY in capital letters by pressing the ◇ or ◇ button.

Making Printouts With a Caption (continued)

3 Select CAPTION by pressing the ⇧ or ⇩ button.

```
LAYOUT SETUP COLOR
COL/LAY/PRN/INF/OUT/
MEMORY PIX :FRAME/FIELD
MULTI PIX :1/2H/2/4/18
SEPARATE  :OFF/ON
WINDOW    : PRESS[>]
CAPTION   : PRESS[>]

D1 A1    2HF              S
```

Position the cursor to CAPTION by pressing the ⇧ or ⇩ button.

```
CAPTION   : PRESS[>]
```
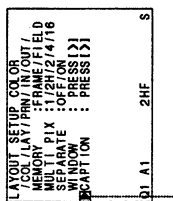
Press the ⇧ or ⇩ button until CAPTION appears.

4 Press the ⇨ button.
The CAPTION menu appears.

5 Position the cursor (the line lit green) to the point where you want to enter the character in the character display area.

To move the cursor:
① Select the arrow corresponding to the direction in which you want to move the green cursor in the character display area, by pressing the ⇧, ⇩, ⇦ or ⇨ button.
② Press the EXEC button.
Each time you press the EXEC button, the cursor moves one position in the designated direction.

Example: Move the cursor to the left by two.
The cursor is currently positioned here.

```
CAPTION ON
```

① Display LEFT.

```
C. ON <LEFT>  03
```
The cursor is currently positioned here.
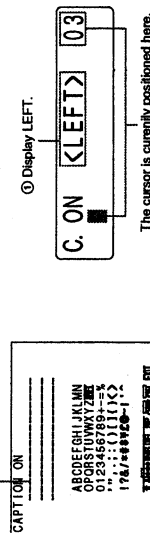
① Highlight the ⇦ button green.
② Press the EXEC button twice.

The cursor moves to this position.

```
CAPTION ON
```
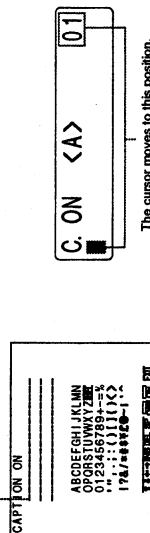
```
C. ON <A>  01
```
The cursor moves to this position.

Note
When OFF is displayed, the CAPTION input mode is set to off. Thus, you cannot add a caption to the printouts. ("Making printouts with a caption" on page 55)

---

6 Select the character you want to enter by pressing the ⇧, ⇩, ⇦ or ⇨ button.

Example: To enter S

```
CAPTION ON
```

Display S by pressing the ⇧, ⇩, ⇦ or ⇨ button.

```
C. ON <S>  01
```
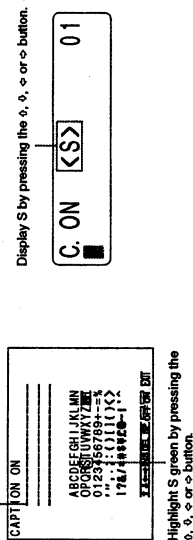
Highlight S green by pressing the ⇧, ⇩, ⇦ or ⇨ button.

7 Press the EXEC button.
The character selected in step 5 appears at the point where the green cursor is positioned in the character display area, after which the cursor moves to the next position.

The cursor moves to this position.

```
CAPTION ON
S
```

```
C. ON <S>  02
S
```
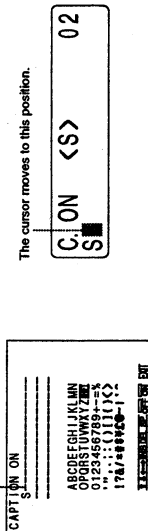
When you enter the wrong character
① Select ⇦ by pressing the ⇧, ⇩, ⇦ or ⇨ button, then press the EXEC button. The cursor moves back by one and the character entered in step 6 is highlighted green.
② Select DEL by pressing the ⇧, ⇩, ⇦ or ⇨ button.

```
CAPTION ON
S
```
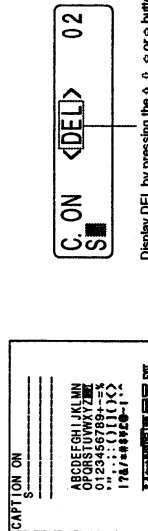
Display DEL by pressing the ⇧, ⇩, ⇦ or ⇨ button.

```
C. ON <DEL>  02
S
```

Switch DEL to green by pressing the ⇧, ⇩, ⇦ or ⇨ button.
③ Press the EXEC button.
The character selected in ① is deleted.
When the character to be deleted is placed among entered characters, the characters back by one.

Note
A dark change of the monitor screen may occur after the EXEC button is pressed.

8 Repeat steps 5, 6 and 7 to enter the remaining characters of the caption.

Making Printouts With a Caption (continued)

To enter a space
① Position the green cursor to the point where you want to enter a space by performing the operations explained in step 5.
② Select SPC by pressing the ◊, ◊, ⇦ or ⇨ button.
③ Press the EXEC button.
A single space is entered and the green cursor moves to the next position.
If there is a character at the position where the space is entered, that character is deleted and a single space is left.

To replace a previously entered character without changing the number of characters
You can replace a previously entered character with a new one.
① Position the green cursor to the character to be replaced by performing the operations explained in step 5.
② Overwrite the invalid character with the correct character by performing the operations explained in steps 6 and 7.
The previously entered character is replaced with the new one.

To add characters midway
① Position the cursor to the position where a character is to be added by performing the operations explained in step 5.
Example: To Add a character between B and C

① Move the cursor to B
(B is highlighted green).

② Switch INS to green

Cursor (lit green)

② Select INS by pressing the ◊, ◊, ⇦ or ⇨ button.
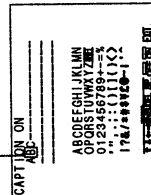
Cursor (blinking)

③ B blinks when the cursor comes to B. ④ Display INS.
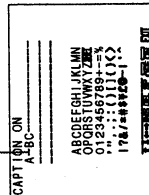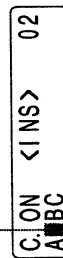
③ Press the EXEC button.
A single space is inserted between B and C and the green cursor is positioned at the space.

Note
A dark change of the monitor screen may occur after the EXEC button is pressed.

④ Enter the character to be added.

9 Select EXIT by pressing the ◊, ◊, ⇦ or ⇨ button.

10 Press the EXEC button.
The entered characters are stored in the memory.
The LAYOUT SETUP menu appears.

To return to the regular screen
Press the MENU button in step 9. The entered characters are stored in the memory and the regular screen appears.

Making printouts with a caption

1 Display the CAPTION menu.
For details of how to display the CAPTION menu, see steps 1 to 4 in "Entering a Caption".

2 Select on by pressing the ◊, ◊, ⇦ or ⇨ button.
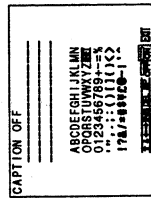
Switch on to green by pressing the ◊, ◊, ⇦ or ⇨ button.

3 Press the EXEC button.

4 Select EXIT by pressing the ◊, ◊, ⇦ or ⇨ button.

5 Press the EXEC button.

After this, all printouts are made with a caption.

Display on by pressing the ◊, ◊, ⇦ or ⇨ button.

To make a printout without a caption
Select off in step 2.

Deleting the Images Stored to Memory Pages

You can delete images captured to memory pages, form either all of memory pages or a single memory page, by using the CLEAR button.
Whether images of all memory pages or single memory page are deleted depends on the setting of CLEAR on the FUNCTION SETUP menu.

Setting the Function of the CLEAR Button

1, 3, 5, 7   4, 8   2, 6

1 Press the MENU button.
The menu just before opened appears.

```
PRINTER SETUP COLOR nnn
▶/COL/LAY/PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL :OFF/ON
 GAMMA     :S/NORMAL/H
 SYSTEM    : PRESS[>]
 FUNCTION  : PRESS[>]

Q1 A1      2HF           S
```

2 Select PRN by pressing the ⇦ or ⇨ button.

By switching PRN to green by pressing the ⇦ or ⇨ button, PRINTER SETUP appears.

```
PRINTER SETUP
/c/l//PRN/i/o/
```

Display PRN in capital letters by pressing the ⇦ or ⇨ button.

3 Select FUNCTION by pressing the ⇧ or ⇩ button.

```
FUNCTION SETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL :OFF/ON
 GAMMA     :S/NORMAL/H
 SYSTEM    : PRESS[>]
▶FUNCTION  : PRESS[>]

Q1 A1      2HF           S
```

Position the cursor to FUNCTION by pressing the ⇧ or ⇩ button.

```
FUNCTION : PRESS[>]
```

Press the ⇧ or ⇩ button until FUNCTION appears.

4 Press the ⇨ button.
The FUNCTION SETUP menu appears.

```
FUNCTION SETUP COLOR nnn
 PRN SETUP : PRESS[>]
▶AUTO.LIVE :OFF/ON
 IMMED.CAP. :OFF/ON
 RM2.FUNC :PRINT/
 CLEAR     :ALL/

Q1 A1      2HF           S
```

```
FUNCTION SETUP
```

5 Select CLEAR by pressing the ⇧ or ⇩ button.

```
FUNCTION SETUP COLOR nnn
 PRN SETUP : PRESS[>]
 AUTO.LIVE :OFF/ON
 IMMED.CAP. :OFF/ON
 RM2.FUNC :PRINT/
▶CLEAR     :ALL/

Q1 A1      2HF           S
```

Position the cursor to CLEAR by pressing the ⇧ or ⇩ button.

```
CLEAR : ALL/Page/off
```

Press the ⇧ or ⇩ button until CLEAR appears.

6 Select the function of the CLEAR button by pressing the ⇦ or ⇨ button.

```
FUNCTION SETUP COLOR nnn
 PRN SETUP : PRESS[>]
 AUTO.LIVE :OFF/ON
 IMMED.CAP. :OFF/ON
 RM2.FUNC :PRINT/
▶CLEAR     ALL

Q1 A1      2HF           S
```

Switch the desired function to green by pressing the ⇦ or ⇨ button.

```
CLEAR : ALL/Page/off
```

Display the desired function in capital letters by pressing the ⇦ or ⇨ button.

Function of the CLEAR button	Settings
To deactivate the CLEAR button	OFF
To delete images of all memory pages	ALL
To delete images of a single memory page	PAGE

Continue to next page →

Deleting the Images Stored to Memory Pages (continued)

7 Select PRN SETUP by pressing the ⬦ or ⬦ button.

```
FUNCTION SETUP COLOR nnn
▶PRN SETUP :PRESS[>]
 AUTO LIVE :OFF/ON
 IMMED. CAP :OFF/ON
 RM2 FUNC :PRINT/
 CLEAR :ALL/

01 A1      2HF      S
```

Position the cursor to PRN SETUP by pressing the ⬦ or ⬦ button.
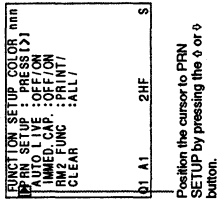
8 Press the ⬦ button.
The PRINTER SETUP menu appears.
Once you set the function of the CLEAR button, the CLEAR button functions according to the setting until the function setting is changed.

> SYSTEM SETUP
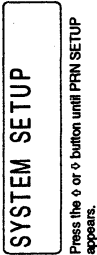
Press the ⬦ or ⬦ button until PRN SETUP appears.

To return to the regular screen
Press the MENU button.

Deleting Images

You can delete images captured to memory pages, either from all memory pages or a single memory pages.
If the source image is displayed on the video monitor, press the CLEAR button once so that the memory image will be displayed.

Deleting images in all memory pages simultaneously

Before deleting images in all memory pages
Set CLEAR to ALL on the FUNCTION SETUP menu.

> **Note**
> You cannot restore images once they have been deleted.
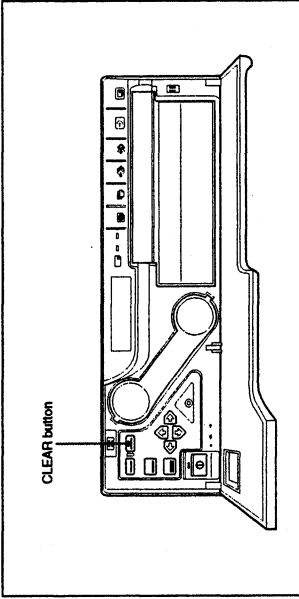
CLEAR button

Press the CLEAR button.
All images stored in the printer are cleared.

Installation and Adjustment

Supplied Accessories

The printer is packed together with the following accessories. Check that nothing is missing from your package.

Paper cover (1)   Paper tray (1)

AC power cord (1)
Color printing pack a) (1)
Warranty card (1) (for US and Canadian model only)
Operating Instructions (1)

a) Use the ink ribbon cartridge and paper for operation check.
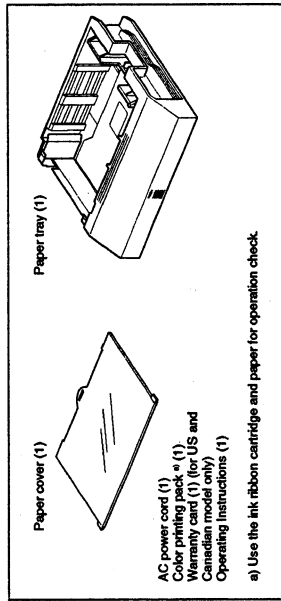
Notes
• Retain the original carton and packing materials in case you have to transport the unit in the future.
• Remove the ink ribbon cartridge and paper tray when transporting the printer.

Deleting the Images Stored to Memory Pages (continued)

Deleting images in a certain memory page

Before deleting images

Set CLEAR to PAGE on the FUNCTION SETUP menu.

1 Press the SOURCE/MEMORY button when the source image is displayed on the video monitor screen.
The image stored in memory is displayed on the screen.

2 Select the memory page from which images are to be deleted by pressing the MEMORY PAGE button.

3 Press the CLEAR button.
The image in the memory page selected in the step 2 is deleted.

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Supplied Accessories (continued)

Assembly

Attach the supplied paper cover, paper tray and ink ribbon cartridge to the printer.
For details of how to assemble them, see the pages given in parentheses.

Ink ribbon cartridge
(page 9)

Printer

Paper tray (page 12)

Paper cover
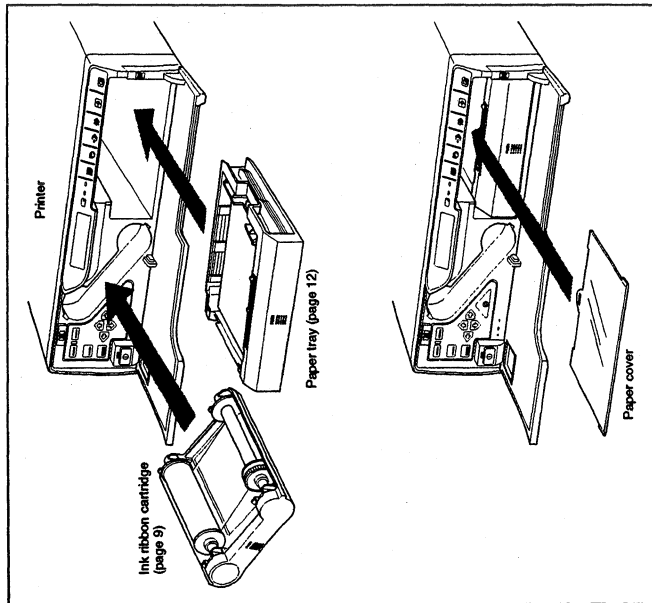
Preparing the Remote Control Unit

The following remote control units (not supplied) allow you to control the printer remotely.
- RM-5500 Remote Control Unit: Used to connect to the REMOTE 1 connector
- RM-91 Remote Control Unit, FS-20/36 Foot switch: Used to connect to the REMOTE 2 connector.

The operations to be remotely controlled by the above remote control units depend on the remote operation settings made with the FUNCTION SETUP menu. ("Selecting the Operating Mode for Automatic Printing Capabilities" page 85)

Using the RM-5500 remote control unit (not supplied)

The RM-5500 Remote Control Unit can be used either as a wireless type or wired type. The buttons on the remote control unit duplicate those on the front panel of the printer. (see "Front" page 108 and "Sub Panel" page 110)
You can use the remote control unit's buttons which have the same name as the one on the printer.

Inserting batteries

Install the batteries in the remote control unit before using it.

1 Remove the battery compartment cover.

2 Insert the two R6 (size AA) 1.5 V batteries.
Note the polarity. Be careful to insert the batteries correctly.

3 Replace the cover.

Battery life

The battery life depends on how much you use the remote control unit. Install fresh batteries as soon as you notice the unit's range becoming shorter.

Notes
When using the batteries:
- Remove the batteries from the remote control unit if you do not intend to use it for an extended period of time. The batteries may leak if you leave them in the remote control unit.
- Should the batteries leak, clean the battery case thoroughly with a soft cloth and install fresh batteries.
- Be careful to insert the batteries correctly. Note the polarity, as indicated inside the battery compartment.
- Replace exhausted batteries with fresh ones. Never mix a fresh battery with a used battery or with a different kind of battery.

Supplied Accessories (continued)

Using the RM-5500 remote control unit (not supplied) as a wireless unit

When using the remote control unit as a wireless unit, aim the head of the remote control unit at the remote sensor on the printer. With fresh batteries, the range of the remote control unit is about 3 meters.

Using the RM-91/FS-20/36

The operation of the RM-91 Remote Control Unit (not supplied) and FS-20 Foot Switch (not supplied) can be controlled remotely by sending a pulse signal to the REMOTE 2 connector in addition to the remote operation setting on the FUNCTION SETUP menu.
FS-36 (not supplied) has three switches that have different functions.
For detailed information on how to use those switches, refer to the manual supplied with the FS-36.

Connections

To enable printing, video equipment to act as an input signal source, and a video monitor to display images or menus must be connected.
The following diagrams illustrate how to make the input, output and remote control connections. Use this as a guide when connecting the necessary signals to and from the equipment to be used for printing.

Note
• Turn off the power of each device before attempting to make any connections.
• Connect the AC power cord last.

Making Connections for Storing Video Images

Connect the video equipment providing the video images to be printed.
Connect the video equipment which will be used in actual printing, using the following diagram as a guide.
Before connecting the video equipment, see "Important safeguards/notices for use in the medical environment" on page 2.

Connections (continued)

Making Connections to Enable Remote Control

The printer can be controlled remotely by connecting the RM-5500 Remote Control Unit (not supplied), RM-91 Remote Control Unit (not supplied), the FS-20/36 Foot Switch (not supplied) or the personal computer.

Computer a)

RS-232C cable SMF-1015

to RS-232C

UP-2900MD/2950MD

to AC IN

AC power cord (supplied)

to wall outlet

to REMOTE 2

RM-91 (not supplied)

to REMOTE 1

RM-5500 (not supplied)

a) When connecting a personal computer, select the appropriate baud rate from the SYSTEM SETUP menu ("Setting the Baud Rate for Computer Communication" page 95).

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Making Connections for Viewing Images to be Printed

Connect a video monitor to view stored images and to check those to be printed. Connect the necessary video monitor which will be used in actual printing, using the following diagram as a guide.
Before connecting the video equipment, see "Important safeguards/notices for use in the medical environment" on page 2.

NTSC/PAL selector b)
NTSC PAL

UP-2900MD/2950MD

to RGB/SYNC OUTPUT a)

75-ohm coaxial cable with BNC connectors

to RGB input connections

to VIDEO OUTPUT

to S-VIDEO OUTPUT

Connecting cable (with DIN 4-pin connectors) YC-15EV

to AC IN

AC power cord

to wall outlet

75-ohm coaxial cable with BNC connectors

to S-VIDEO input connector

to composite video input connector

Video monitor

a) The RGB/SYNC INPUT connectors are equipped with models other than UP-2300P. When you connect the video monitor to RGB SYNC OUTPUT, set SYNC ON G to ON on the OUTPUT SETUP menu.
b) This selector is equipped with models other than UP-2300P/2800P/2850P. Set the NTSC/PAL selector to your TV system. To switch the TV system, turn the power off once, then change the setting. If you change the setting with the power on, the mode will not be switched.

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Setting Up the Printer

You can set up the printer specification. Once you have adjusted and stored, the printer operates according to the setting until those values are modified. You can set up the printer according to the intended purpose, connected equipment or your individual preferences.

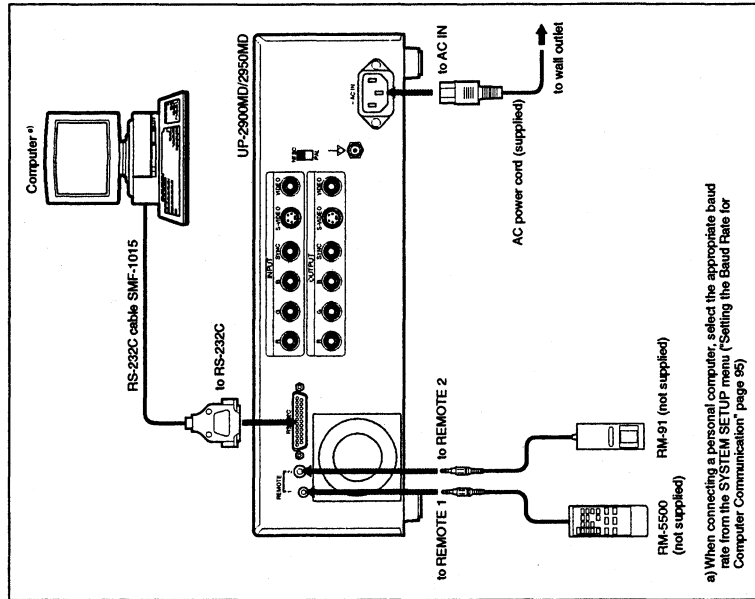| Menu	Functions to be set	Reference page
COLOR ADJUST SETUP	Adjusting the printout color (color intensity and contrast) and sharpness.	75
LAYOUT SETUP	• Selecting the memory mode	29
	• Selecting the type of printouts	32
	• Selecting whether white borders are added to multiple reduced images.	34
CAPTION a)	Entering a caption	51
WINDOW SETUP a)	• Setting the size of one image.	44
	• Changing the printout size/printout area.	82
PRINTER SETUP	• Setting the print quantity	19
	• Selecting whether multiple reduced images are automatically stored at regular intervals.	37
	• Adjusting the tone of printout	80
SYSTEM SETUP b)	• Adjusting the brightness of the printer window display.	91
	• Setting the baud rate for computer communication.	95
	• Selecting whether the operation and error tones sound.	93
	• Selecting the application mode (printer operation mode)	25
FUNCTION SETUP	• Selecting the image which appears after storing the image into memory, source image or memory image.	38
	• Selecting the timing of the pulse signal input to the REMOTE 2 connector	86
	• Selecting operation mode for automatic printing capabilities of remote commanders connected to REMOTE 2 connector.	87
	• Setting the function of the CLEAR button	56
INPUT SETUP	• Selecting the input signal	14
	• Compensating for the input signals.	69
OUTPUT SETUP	• Erasing the screen display.	89
	• Matching the video monitor color to the printout color.	72
	• Selecting whether the printer synchronizes with the internal sync signal included in the channel G of the RGB signals. c)	66

a) This menu is the sub menu of the LAYOUT SETUP menu.
When the FLEX I/PP application mode is selected, this window is used to set the size of the image.
b) This is the sub menu of the PRINTER SETUP menu.
c) This item is available for models other than UP-2300P.

This section explains the following settings and adjustments.
• Compensating for the input signals (on this page)
• Matching the video monitor color to the printout color (page 72)
• Adjusting the printout color and sharpness (page 75)
• Adjusting the tone of the printout (page 80)
• Changing the printout size/printout area (page 82)
• Selecting the operating mode for automatic printing capability (page 85)
• Erasing the screen display (page 89)
• Adjusting the printer window display brightness (page 91)
• Selecting whether to enable the operation and error tones (page 93)
• Setting the baud rate for computer communication (page 95)

Compensating for the Input Signals

A video image recorded under poor conditions may be of poor color quality. If the signal is an NTSC or PAL composite video signal or separate luminance (Y) and chrominance (C) signals, you can correct the color and level of the input signal to a certain extent on the INPUT SETUP menu.

Note
You cannot adjust an image once it has been stored in memory. Restore an image after adjustment.
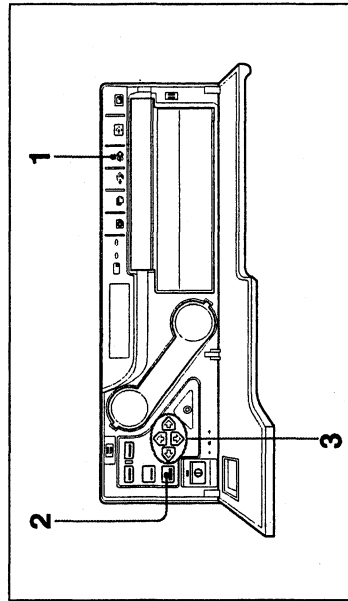
1 When the memory image is displayed on the screen, press the SOURCE/MEMORY button.
The image from the video source appears.

Setting Up the Printer (continued)

2 Press the MENU button, then select INPUT SETUP menu by pressing the ⬦ or ⬦ button.

```
INPUT SETUP COLOR:nnn
/COL/LAY/PRN/IN/OUT/
INPUT SEL :V/SV/RGB
HUE    :-2
COLOR  :0    OFF
GAIN   :0
OFFSET :0
AGC    :/OFF
Q1 A    1            S
```

```
INPUT SETUP
/C/1/P/IN/0/
```

Display IN in capital letters by pressing the ⬦ or ⬦ button. INPUT SETUP appears.

Switch IN to green by pressing the ⬦ or ⬦ button. INPUT SETUP menu appears.
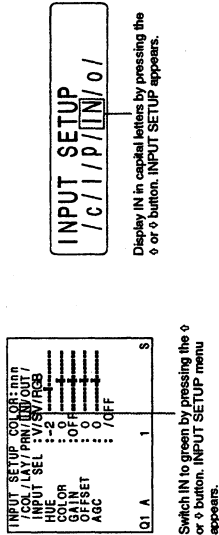
3 Perform the adjustments as follows.
① Select the adjustment item by pressing the ⬦ or ⬦ button.
② Perform the adjustment by pressing the ⬦ or ⬦ button.

To adjust the color intensity, hue and contrast

Adjustment	Menu adjustment item	Button and operation result	
		⬦ button	⬦ button
Hue[a]	HUE[a]	The hue becomes greenish.	The hue becomes purplish.
Color intensity	COLOR[b]	The color intensity strengthens.	The color intensity weakens.
	OFF	In case of the black and white image	
Contrast	GAIN	The contrast strengthens.	The contrast weakens.
Brightness	OFFSET	Becomes brighter.	Becomes darker.

a) In PAL mode, no HUE adjustment is provided on the INPUT SETUP menu.
b) Adjust the color such that skin tones appear natural. For the COLOR and HUE adjustment, you can correct the color intensity and hue of an NTSC composite video signal or a separated luminance (Y) and chrominance (C) signal.

When the printout or monitor image appears blackish or whitish

Adjust the input signal to the optimum level for printing.

Menu adjustment item	Selection	When selecting
AGC (Automatic Gain Control)	ON	Normal (when the proper signal is input)
	OFF	When the printout or monitor image appears blackish or whitish.

```
INPUT SETUP COLOR:nnn
/COL/LAY/PRN/IN/OUT/
INPUT_SEL :V/SV/RGB
HUE       0
COLOR     0    OFF
GAIN      0
OFFSET    0
AGC       /OFF
Q1 A          STICK16   S
```

① Position the cursor to the desired item by pressing the ⬦ or ⬦ button.
② Make adjustment by pressing the ⬦ or ⬦ button.

```
HUE    :: * ----------- 0
COLOR  :: * ----------- 0
GAIN   :: * ----------- 0
OFFSET :: * ----------- 0
AGC       off/ON ------ 0
```

① Press the ⬦ or ⬦ button until the desired item appears.
② Make adjustment by pressing the ⬦ or ⬦ button.
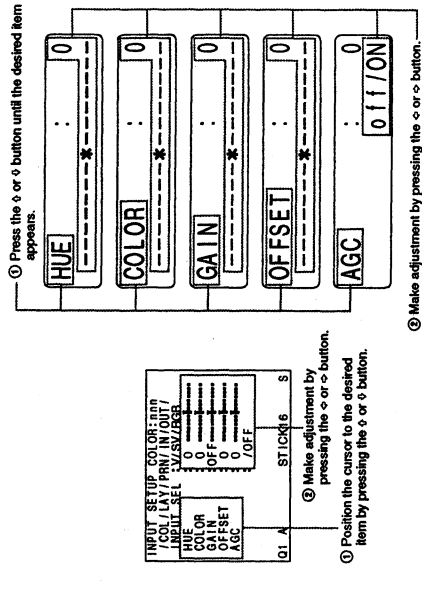
4 Press the MENU button.
The regular screen appears.

Setting Up the Printer (continued)

Matching the Video Monitor Color to the Printer Color

To match the color of the monitor image to that of the printout, adjust the monitor and printer colors such that the monitor color is the same as that of the printout. The printer outputs either of two kinds of video signals according to the printer settings.

- EE (E to E): Signals are output to the monitor after being processed by the printer's circuitry.
- THRU (THROUGH): Signals are output to the monitor as is.

Before adjusting the printout color

The monitor color may not be adjusted correctly even if the printer color is correctly adjusted. Check the color of the video monitor before adjusting the printout color. In such a case, use the THRU signal.

After adjusting the color of the video monitor using video monitor controls, adjust the color of the printer's output signal.

Note

This adjustment is performed to adjust the color of the printer output signal when the monitor color is unsatisfactory. This adjustment does not affect the printout itself. To adjust the color of the printout, see "Adjusting the Printout Color and Sharpness" on page 75).

---

1 Press the MENU button, then select OUTPUT SETUP menu by pressing the ⇦ or ⇨ button.

```
OUTPUT SETUP COLOR nnn
▶/COL/LAY/PRN/IN/OUT/
 DISPLAY    :OFF/ON
 SOURCE     :THRU/EE
 SYNC ON G  :OFF/ON
 MONI C-R   :    0
 MONI M-G   :    0
 MONI Y-B   :    0

Q1 A1    2HF          S
```

Switch OUT to green by pressing the ⇧ or ⇩ button. OUTPUT SETUP menu appears.

```
OUTPUT SETUP
/c/l/p/i/OUT/
```

Display OUT in capital letters by pressing the ⇧ or ⇩ button. OUTPUT SETUP appears.

2 Select SOURCE by pressing the ⇧ or ⇩ button.

```
OUTPUT SETUP COLOR nnn
 /COL/LAY/PRN/IN/OUT/
 DISPLAY    :OFF/ON
▶SOURCE     :THRU/EE
 SYNC ON G  :OFF/ON
 MONI C-R   :    0
 MONI M-G   :    0
 MONI Y-B   :    0

Q1 A1    2HF          S
```

Position the cursor to SOURCE by pressing the ⇧ or ⇩ button.

```
SOURCE   :  thru/EE
```

Display SOURCE by pressing the ⇧ or ⇩ button.

3 Select EE by pressing the ⇦ or ⇨ button.

```
OUTPUT SETUP COLOR nnn
 /COL/LAY/PRN/IN/OUT/
 DISPLAY    :OFF/ON
▶SOURCE     :THRU/EE
 SYNC ON G  :OFF/ON
 MONI C-R   :    0
 MONI M-G   :    0
 MONI Y-B   :    0

Q1 A1    2HF          S
```

Switch EE to green by pressing the ⇦ or ⇨ button.

```
SOURCE   :  thru/EE
```

Display EE in capital letters by pressing the ⇦ or ⇨ button.

4 Press the MENU button.
The regular screen appears.

5 Capture a new image into memory and make a printout.
Adjust the settings by comparing the printout with the image on the monitor.

6 Press the MENU button, then select OUTPUT SETUP menu by pressing the ⇦ or ⇨ button.

4,8   2,3,8   1,6

Setting Up the Printer (continued)

7 Adjust the monitor while comparing the printout with the image on the monitor.
① Select the adjustment item by pressing the ⇧ or ⇩ button.
② Perform adjustment by pressing the ⇦ or ⇨ button.

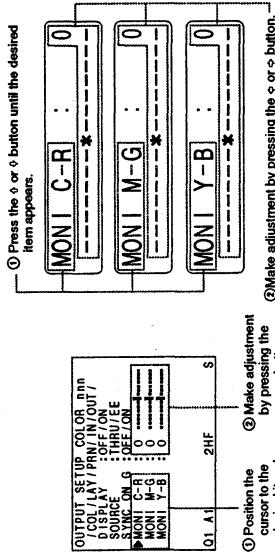| Menu Adjustment Item	When selecting	Button to be pressed	Adjustment direction on the menu
MONI C-R	To make the screen become reddish	⇨ button	Toward R (red)
	To make the screen become cyan (blue)	⇦ button	Toward C (cyan)
MONI M-G	To make the screen become greenish	⇨ button	Toward G (green)
	To make the screen become magenta (pink)	⇦ button	Toward M (magenta)
MONI Y-B	To make the screen become bluish	⇨ button	Toward B (blue)
	To make the screen yellowish	⇦ button	Toward Y (yellow)

```
OUTPUT SETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
DISPLAY       :OFF/ON
SOURCE        :THRU/EE
SYNC ON-G     :OFF/ON
MONI C-R      : 0   ————
MONI M-G      : 0   ————
MONI Y-B      : 0   ————
Q1 A1     2HF         S
```

① Position the cursor to the desired item by pressing the ⇧ or ⇩ button.

② Make adjustment by pressing the ⇦ or ⇨ button.

① Press the ⇧ or ⇩ button until the desired item appears.

```
MONI C-R
    ————*—————  0
```
```
MONI M-G
    ————*—————  0
```
```
MONI Y-B
    ————*—————  0
```

② Make adjustment by pressing the ⇦ or ⇨ button.

8 Press the MENU button.
The regular screen appears.

Adjusting the Printout Color

You can adjust the printout quality by adjusting the color intensity, printout sharpness and tone (GAMMA) of the printout.

Adjusting the color intensity, contrast and sharpness

You can adjust the color intensity (RED/GREEN/BLUE), contrast (DARK/LIGHT) and printout sharpness. You can store up to three settings.

These settings are managed according to the LOAD COLOR number. The color intensity, picture contrast and sharpness of a printout are determined by recalling one of the three settings according to their LOAD COLOR numbers. This is useful when you are using more than one item of video equipment, each having different characteristics, when you want to print images having different color qualities and picture contrast, and when multiple users access a single printer.

Also, you can make a printout using temporarily set values, without erasing the stored adjustment values.

Perform the adjustments while viewing the images stored in memory.
All values of the color intensity and contrast are factory-set to 0 and the sharpness is set to 3 for LOAD COLOR numbers 1, 2 and 3.

8 2, 3, 4, 5, 6

7

1
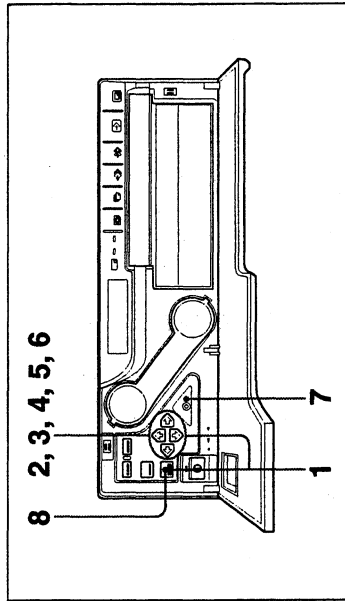
1 Press the MENU button, then select COLOR ADJUST menu by pressing the ⇧ or ⇩ button.

```
COLOR ADJUST COLOR nnn
▶/COL/LAY/PRN/IN/OUT/
  LOAD COLOR:1/2/3
  CYN-RED    : 0   ————
  MAG-GRN    : 0   ————
  YEL-BLU    : 0   ————
  DARK       : 0   ————
  LIGHT      : 0   ————
  SHARPNESS :2 [1-5]
  SAVE COLOR:1/2/3 [EXEC]
  Q1 A       STICK16     S
```

Switch COL to green by pressing the ⇧ or ⇩ button. COLOR SETUP menu appears.

```
COLOR  ADJUST
/COL/1/P/i/o/
```
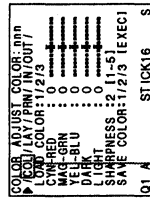
Display COL in capital letters by pressing the ⇧ or ⇩ button. COLOR SETUP appears.

Setting Up the Printer (continued)

2 Select LOAD COLOR by pressing the ⬆ or ⬇ button.

```
COLOR ADJUST COLOR:nnn
/COL/LAY/PRN/IN/OUT/
▶LOAD COLOR:1/2/3
 CYN-RED    : 0  ──┼──
 MAG-GRN    : 0  ──┼──
 YEL-BLU    : 0  ──┼──
 DARK       : 0  ──┼──
 LIGHT      : 0  ──┼──
 SHARPNESS  :3 [1-5]
 SAVE COLOR:1/2/3 [EXEC]
Q1 A        STICK16    S
```

Position the cursor to LOAD COLOR by pressing the ⬆ or ⬇ button.
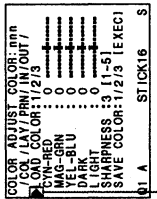
LOAD COLOR:
1/-/-

Display LOAD COLOR by pressing the ⬆ or ⬇ button

3 Select the LOAD COLOR number of the values to be adjusted or to be modified by pressing the ⬅ or ➡ button.

```
COLOR ADJUST COLOR:nnn
/COL/LAY/PRN/IN/OUT/
▶LOAD COLOR:1/2/3
 CYN-RED    : 0  ──┼──
 MAG-GRN    : 0  ──┼──
 YEL-BLU    : 0  ──┼──
 DARK       : 0  ──┼──
 LIGHT      : 0  ──┼──
 SHARPNESS  :3 [1-5]
 SAVE COLOR:1/2/3 [EXEC]
Q1 A        STICK16    S
```

Switch the desired LOAD COLOR number to green by pressing the ⬅ or ➡ button.
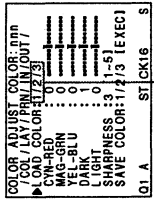
LOAD COLOR:
-/2/-

Display the desired LOAD COLOR number by pressing the ⬅ or ➡ button.

When modifying, you can preserve the original settings. (See "To retain the originally set value" on page 79.)

4 Adjust the printout color.

① Select the item to be adjusted by pressing the ⬆ or ⬇ button.
② Perform the adjustment by pressing the ⬅ or ➡ button.

The RED, GREEN and BLUE color component and contrast settings are divided into 15 steps, from −7 to +7, indicated by a value and graph. The center of the graph corresponds to the standard color.
You can set the sharpness to any of 5 steps from 1 to +5. On a setting of step 3 corresponds to the standard sharpness.

When adjusting the RED/GREEN/BLUE (color intensity)

Menu Adjustment Item	When selecting	Button to be pressed	Adjustment direction on the menu
CYN-RED	To make the image reddish	➡ button	Toward RED
	To make the image cyan (blue)	⬅ button	Toward CYN (cyan)
MAG-GRN	To make the image magenta (pink)	➡ button	Toward MAG (magenta)
	To make the image greenish	⬅ button	Toward GRN (green)
YEL-BLU	To make the image yellowish	➡ button	Toward YEL (yellow)
	To make the image bluish	⬅ button	Toward BLU (blue)

```
CYN - RED  :  ──┼──*──  0
```
```
MAG - GEN  :  ──┼──*──  0
```
```
YEL   BLU  :  ──┼──*──  0
```
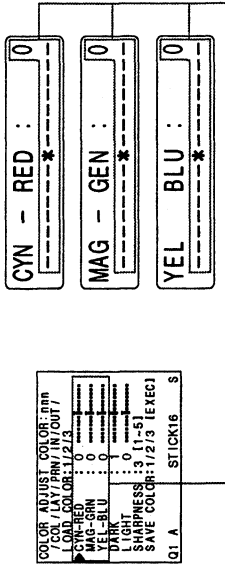
Adjust the color intensity

When adjusting DARK/LIGHT (contrast)

Adjustment Item	When selecting
DARK	To adjust the dark area of an image
LIGHT	To adjust the light area of an image

```
DARK  :  ──┼──*──  6
```
```
LIGHT :  ──┼──*──  0
```
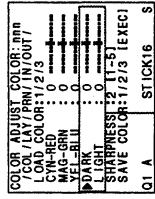
The contrast in the dark area or light area is increased in the + direction by pressing the ➡ button.
The contrast in the dark area or light area is weakened in the - direction by pressing the ⬅ button.

Setting Up the Printer (continued)

When adjusting the sharpness
You can set the sharpness to any of 5 steps from 1 to 5. A setting of step 3 corresponds to the standard sharpness.

When selecting	Content of settings
To make a soft outline	Toward step 1
To make a normal outline	Centered (step 3)
To make a sharp outline	To the right (toward step 5)

SHARPNESS : 2 [1-5]

```
COLOR ADJUST COLOR: nnn
/COL /LAY/PRN/IN/OUT/
LOAD COLOR:1/2/3
CYN-RED    : 0
MAG-GRN    : 0
YEL-BLU    : 0
DARK       : 0
LIGHT
SHARPNESS :2 [1-5]
SAVE COLOR:1/2/3 [EXEC]
Q1 A        STICK16    S
```

The number and the corresponding sharpness increase every time you press the ◊ button.
The number and the corresponding sharpness decrease every time you press the ◊ button.

Once you have changed the value
Once you have changed the value, TEMP (temporary) appears on the menu screen. TEMP indicates that the settings are temporary and have not yet been stored.

5 Select SAVE COLOR by pressing the ◊ or ◊ button.

Position the cursor to SAVE COLOR by pressing the ◊ or ◊ button.

6 Select the SAVE COLOR number to which new settings are to be stored by pressing the ◊ or ◊ button.

SAVE COLOR: -/2/- [EXEC]

Switch the desired SAVE COLOR number to green by pressing the ◊ or ◊ button.

To retain the originally set value
Select a SAVE COLOR number which is different from the LOAD COLOR number selected in step 3.

7 Press the EXEC button.
The settings are registered to the SAVE COLOR number selected in step 6. TEMP disappears from the menu.

8 Press the MENU button.
The regular screen appears.

To copy the settings made for one certain LOAD COLOR number to another PRESET number.

1 Select the source LOAD COLOR number for which the settings to be copied are stored on the COLOR ADJUST menu.

2 Select the target SAVE COLOR number to which data is to be copied.

3 Press the EXEC button.
Settings stored to the LOAD COLOR number selected in step 1 are copied to the SAVE COLOR number selected in step 2.

To recall the LOAD COLOR number in which printout color settings (color intensity, contrast ad sharpness) are stored
Switch the desired LOAD COLOR number to green for the LOAD COLOR item in the COLOR ADJUST menu.
The printout is made according to the setting of the selected LOAD COLOR number as long as you do not modify the settings.

Setting Up the Printer (continued)

Adjusting the tone of the printout

You can adjust the tone so that the details in the white or black part is clearly printed.

Note

The tone (GAMMA) setting is activated only when the UPC-2010 color printing pack or UPC-2020 B/W printing pack is used.
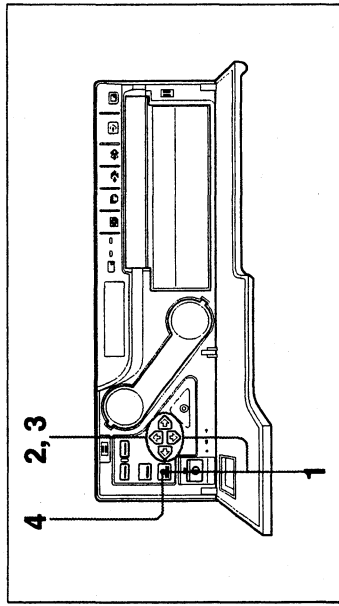
4 2,3 1

1 Press the MENU button, then select PRINTER SETUP menu by pressing the ◇ or ◇ button.

```
PRINTER SETUP COLOR:nnn
▶/COL/LAY/PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL  :OFF/ON
 GAMMA     :S/NORMAL/H
 SYSTEM    : PRESS[>]
 FUNCTION  : PRESS[>]

Q1 A1         2HF        S
```

Switch PRN to green by pressing the ◇ or ◇ button. PRINTER SETUP menu appears.

```
PRINTER  SETUP
/c/I/|PRN|/i/o/
```
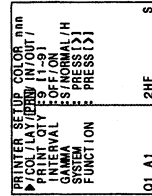
Display PRN in capital letters by pressing the ◇ or ◇ button. PRINTER SETUP appears.

2 Select GAMMA by pressing the ◇ or ◇ button.

```
PRINTER SETUP COLOR:nnn
 /COL/LAY/PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL  :OFF/ON
▶GAMMA     :S/NORMAL/H
 SYSTEM    : PRESS[>]
 FUNCTION  : PRESS[>]

Q1 A1         2HF        S
```

Position the cursor to GAMMA by pressing the ◇ or ◇ button.

```
|GAMMA|   :
     S/NORMAL/H
```

Display GAMMA by pressing the ◇ or ◇ button.

3 Select the desired tone pressing the ◇ or ◇ button.

```
COLOR ADJUST COLOR:nnn
 /COL/LAY/PRN/IN/OUT/
▶LOAD COLOR[1/2/3]
 CYN-RED    :0   ▬▬▬▬
 MAG-GRN    :0   ▬▬▬▬
 YEL-BLU    :0   ▬▬▬▬
 DARK       :1   ▬▬▬▬
 LIGHT      :
 SHARPNESS  :3   [1-5]
 SAVE COLOR:1/2/3 [EXEC]

Q1 A         ST CK16     S
```

Switch the desired tone to green by pressing the ◇ or ◇ button.

When selecting	Setting
To make a printout of an image where there are a lot of white or light-colored areas.	SOFT
To make a printout of a normal image.	NORMAL
To make a printout of an image where there are a lot of black or dark-colored areas.	HARD

```
LOAD COLOR:
  -/|2|/-
```

Display the desired tone by pressing the ◇ or ◇ button.

4 Press the MENU button.

Setting Up the Printer (continued)

Changing the Printout Size/Printout Area

When you print an image that is narrower or wider than the standard screen size, a black frame may be printed or the image may be partially cut. In such a case, you can change the screen size. Or, a black line may be produced on the printout even though it does not appear on the video monitor. Any portion for which there is no video signal is printed in black. This may occur when you make printouts after connecting a different video source or play back different video software. In such a case, you can adjust the printout area by moving the screen either horizontally or vertically. When a black frame appears around the printout, even after the printout area has been shifted, narrow the printout size because the image has been overscanned beyond the range of the regular screen.

6   2, 3, 4, 5

1

1 Press the MENU button, then select LAYOUT SETUP menu by pressing the ⇧ or ⇩ button.

```
LAYOUTSETUP COLOR nnn
►/COL/LAY/PRN/IN/OUT/
MEMORY     :FRAME/FIELD
MULTI PIX  :1/2H/2/4/16
SEPARATE   :OFF/ON
WINDOW     : PRESS[>]
CAPTION    : PRESS[>]

Q1 A1      2HF              S
```

Switch LAY to green by pressing the ⇧ or ⇩ button. LAYOUT SETUP menu appears.

```
LAYOUTSETUP
/c/LAY/ p / i / o /
```

Display LAY in capital letters by pressing the ⇧ or ⇩ button. LAYOUT SETUP appears.

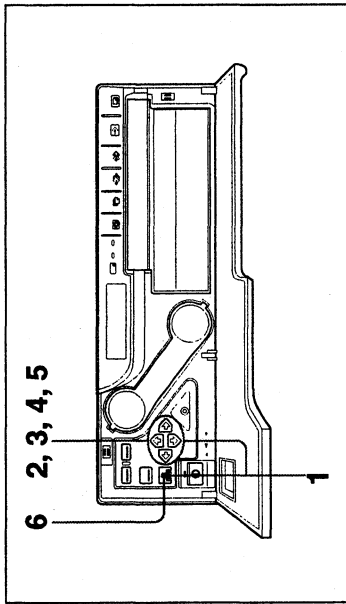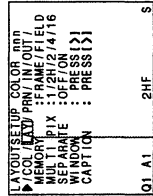**2** Select WINDOW by pressing the ⇧ or ⇩ button.

```
LAYOUT SETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
MEMORY     :FRAME/FIELD
MULTI PIX  :1/2H/2/4/16
SEPARATE   :OFF/ON
►WINDOW    : PRESS[>]
CAPTION    : PRESS[>]

Q1 A1      2HF              S
```

Position the cursor to WINDOW by pressing the ⇧ or ⇩ button.

```
WINDOW   PRESS[>]
```
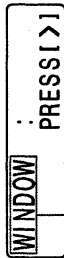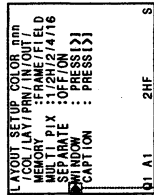
Display WINDOW by pressing the ⇧ or ⇩ button.

3 Press the ⇨ button.
The WINDOW SETUP menu appears.

```
WINDOW SETUP COLOR nnn
►LAY SETUP :PRESS[>]
H START    :00 DOT(S)
V START    :00 DOT(S)
H WIDTH    :800 DOTS
V WIDTH    :472 DOTS

Q1 A1      2HF              S
```

```
WINDOW SETUP
```
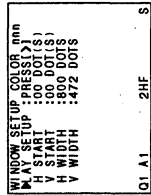
4 Adjust the printer according to the obtained printout.
① Select the item to be adjusted by pressing the ⇧ or ⇩ button.
② Perform the adjustment by pressing the ⇦ or ⇨ button.

When a black frame is printed or the image is partially cut
Adjust the printout size by using the H WIDTH and V WIDTH items from the menu.

When selecting	Adjustment item	Button to be used	Adjustment result
To change the size, adjust the position of the right edge. The left edge remains fixed. (The screen size changes horizontally.)	H-WIDTH	⇦ button	Widened at the right edge.
		⇨ button	Narrowed with the left edge remaining fixed.
To change the size, adjust the position of the bottom edge. The top edge remains fixed. (The screen size changes vertically.)	V-WIDTH	⇧ button	Enlarged downwards.
		⇩ button	Vertical sized reduced with the top edge remaining fixed.

Adjusting the printout size horizontally.

```
H WIDTH : 800 DOTS
```
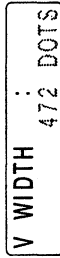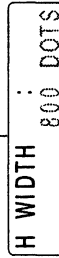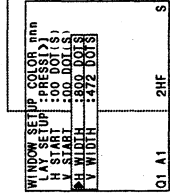
Adjusting the printout size vertically.

```
WINDOW SETUP COLOR nnn
LAY SETUP :PRESS[>]
H START   :00 DOT(S)
V START   :00 DOT(S)
►H WIDTH  :800 DOTS
V WIDTH   :472 DOTS

Q1 A1     2HF              S
```

```
V WIDTH : 472 DOTS
```

Setting Up the Printer (continued)

When a black line appears on the printout

Adjust the printout area according to the position of the line on the printout, by using the H START and V START items on the menu.

Position where the black line appears	Menu adjustment item	Button to be used	Adjustment result
On the right	H START (horizontal direction)	⬦ button	The image position shifts to the right with the size remaining as is.
On the left		⬦ button	The image position shifts to the left with the sized remaining as is.
At the top	V START (vertical direction)	⬦ button	The image position shifts up with the size remaining as is.
At the bottom		⬦ button	The image position shifts down with the size remaining as is.

When the black line is at the right or left edge

```
WINDOW SETUP COLOR nnn
▶LAY.SETUP :PRESS[>]
  H START   :00 DOTS]
  V START   :00 DOTS]
 PH WIDTH   :800 DOTS
  V WIDTH   :472 DOTS

Q1 A1        2HF         S
```

```
H START  :
         00 DOT(S)
```

When the black line is at the top or bottom

```
V START  :
         00 DOT(S)
```

To clear the adjusted value

Press the MENU button from the WINDOW SETUP menu. The adjusted values are cleared and the values are reset to the original ones.

Note

When a black line still appears, even after adjusting H START or V START, change the printout size.

5 Select LAYOUT SETUP by pressing the ⬦ or ⬦ button, then press the ⬦ button.

The adjusted values are stored. The LAYOUT SETUP menu appears.

6 Press the MENU button.
The regular screen appears.

To check the adjustment result

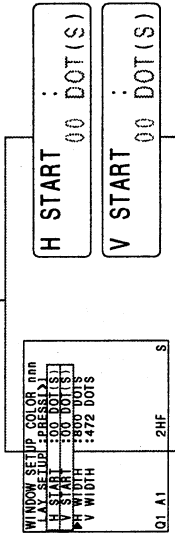Cature a new image and print it to check that no black frame appears on the printout, that the image is not partially cut, and that no black line appears.

Selecting the Operation Mode for Automatic Printing Capabilities

You can control the printer with either of the following options.
- RM-5500 Remote Control Unit (not supplied): Connected to REMOTE 1 connector
- RM-91 Remote Control Unit, FS-20/36 Foot Switch (not supplied): Connected to REMOTE 2 connector ("Making Connections to Enable Remote Control" page 67)

Using the menu, you can assign desired functions to the remote control unit connected to the REMOTE 2 connector.

In addition to the above, the printer can be remotely controlled by a pulse signal input to REMOTE 2. (see pages 101 and 102).

Also, you can control the printer using the personal computer.

For detailed information on controlling with the computer, contact with your Sony dealer.
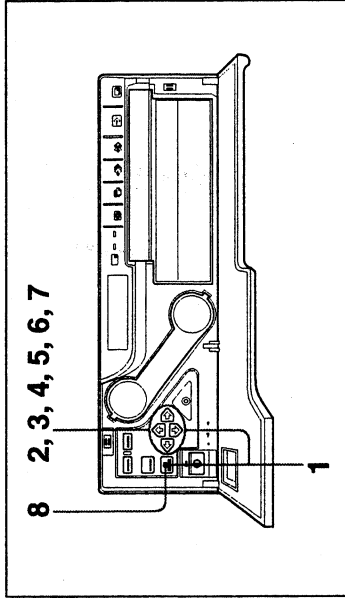
8   2, 3, 4, 5, 6, 7

1 Press the MENU button, then select PRINTER SETUP menu by pressing the ⬦ or ⬦ button.

```
PRINTER SETUP COLOR nnn
▶COL/LAY/[PRN]/IN/OUT/
  PRINT QTY :9 [1-9]
  INTERVAL  :OFF/ON
  GAMMA     :S/NORMAL/H
  SYSTEM    : PRESS[>]
  FUNCTION  : PRESS[>]

Q1 A1        2HF         S
```

Switch PRN to green by pressing the ⬦ or ⬦ button. PRINTER SETUP menu appears.

```
PRINTER SETUP
/c/1/[PRN]/i/o/
```
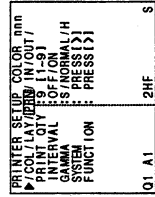
Display PRN in capital letters by pressing the ⬦ or ⬦ button. PRINTER SETUP appears.

Continue to next page →

Setting Up the Printer (continued)

2 Select FUNCTION by pressing the ⇧ or ⇩ button.
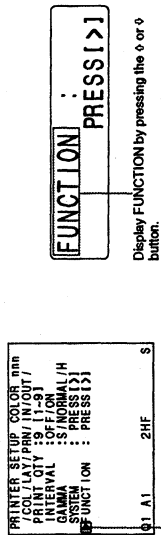
```
PRINTER SETUP COLOR nnn
 PRINT QTY :9 [1-9]
 COLLATY PRN IN/OUT/
 INTERVAL :OFF/ON
 GAMMA :S/NORMAL/H
 SYSTEM : PRESS[>]
►FUNCTION : PRESS[>]

Q1 A1        2HF        S
```

Position the cursor to FUNCTION by pressing the ⇧ or ⇩ button.

```
FUNCTION : PRESS[>]
```

Display FUNCTION by pressing the ⇧ or ⇩ button.

3 Press the ⇨ button.
The FUNCTION SETUP menu appears.

```
FUNCTION SETUP
```

4 Select IMMED. CAP by pressing the ⇧ or ⇩ button.

```
FUNCTION SETUP COLOR nnn
►PRN SETUP :PRESS[>]
 AUTO LIVE :OFF/ON
 IMMED.CAP. :OFF/ON
 RM2 FUNC :/ SRC&CAP
 CLEAR :/ OFF

Q1 A1        2HF        S
```

Position the cursor to IMMED. CAP by pressing the ⇧ or ⇩ button.

```
IMMED. CAP. OFF/on
```
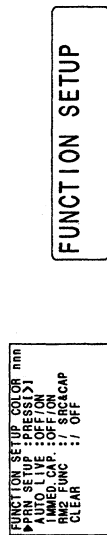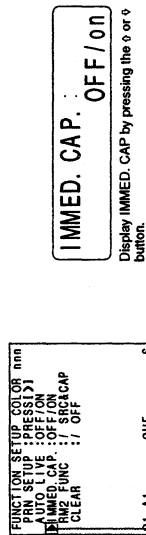
Display IMMED. CAP by pressing the ⇧ or ⇩ button.

5 Select the desired timing to capture the image by pressing the ⇦ or ⇨ button.

Timing	Selection
To capture the image just after the CAPTURE command is received [a]	ON
To capture the image with the timing pulse input to REMOTE 2 connector [b]	OFF

a) When IMMED. CAP is set to ON, display the source image on the video monitor when sending the timing pulse to the printer. The printer operation is only to capture the image when receiving the pulse.
b) For detailed information on the timing pulse to REMOTE 2 connector, see page 101.

Select ON when you want to capture the image at the precise timing by controlling from the computer.

Note
To control the printer remotely using the remote control unit, set the IMMED.CAP item on the FUNCTION SETUP menu to OFF.

```
FUNCTION SETUP COLOR nnn
 PRN SETUP :PRESS[>]
 AUTO LIVE :OFF/ON
►IMMED.CAP. :OFF/ON
 RM2 FUNC :/ SRC&CAP
 CLEAR : OFF

Q1 A1        2HF        S
```
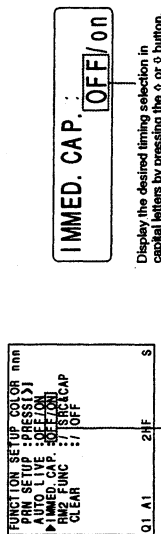
Switch the desired timing selection to green by pressing the ⇧ or ⇩ button.

```
IMMED. CAP. : OFF/on
```

Display the desired timing selection in capital letters by pressing the ⇧ or ⇩ button.

6 Select RM2 FUNC by pressing the ⇧ or ⇩ button.

```
FUNCTION SETUP COLOR nnn
 PRN SETUP :PRESS[>]
 AUTO LIVE :OFF/ON
 IMMED.CAP. :OFF/ON
►RM2 FUNC :PRINT/
 CLEAR :ALL?

Q1 A1        2HF        S
```
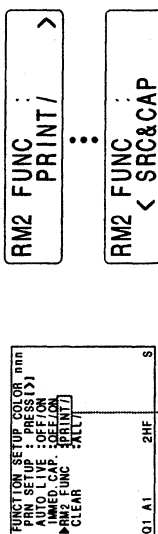
Position the cursor to RM2 FUNC by pressing the ⇧ or ⇩ button.

```
RM2 FUNC : PRINT/     >
...
RM2 FUNC < SRC&CAP
```

Display RM2 FUNC by pressing the ⇧ or ⇩ button.

Setting Up the Printer (continued)

7 Select the function that you want to assign to the remote control unit connected to the REMOTE 2 connector by pressing the ⇧ or ⇩ button.

Items to be selected	Operation
PRINT	Printing whenever you press the switch.
C & PRINT (CAPTURE & PRINT)	Capturing an image to a memory page and printing a memory image. If you press the switch while printing is being performed, the selected image is queued, with the queued image being printed once printing has been completed.
CYCLIC-C (CYCLIC CAPTURE)	Capturing images to memory pages cyclically whenever you press the switch. The printer continues to capture images, replacing that previously stored with a new one.
CAP-STOP (CAPTURE STOP)	Capturing images to a memory page. Once images have been captured to all the memory pages, the printer stops storing images and the message HIT ANY KEY appears.
BACK-SP (CAPTURE BACK)	The pointer (green) returns to its former position whenever you press the switch.
POINTER↑	The pointer (green) moves to the next position whenever you press the switch.
STOP	Stopping printing whenever you press the switch. An paper which is currently being printed will be ejected.
CAP/SRC (CAPTURE/SOURCE)	When the source image is displayed, the image is captured to memory whenever you press the switch. When the memory image is displayed, the source image appears whenever you press the switch.
PRINT & PAGE	Starting to print when you press the switch if the image has been captured in the memory, and at the same time moving to the next memory page. If the image has not been captured in the memory page, the printer does not work correctly when you press the switch of the remote control unit.
SRC & CAP (SOURCE & CAPTURE)	When you press and hold down the switch of the remote control unit, the source image appears on the monitor screen and captures the image at the instant you release the switch.

```
FUNCTION SETUP COLOR nnn
PRN SETUP : PRESS[>]
AUTO LIVE :OFF/ON
IMMED. CAP. :OFF/ON
▶RM2 FUNC :PRINT/
CLEAR :ALL/

Q1 A1        2HF          s
```

Switch the desired function to green by pressing the ⇧ or ⇩ button.

When > is displayed, another function can be selected by pressing the ⇩ button.
When < and > are displayed, another function can be selected by pressing either the ⇧ or ⇩ button.

```
RM2 FUNC :
    PRINT/    >
```

. . .

```
RM2 FUNC :
 <  SRC&CAP
```

Display the desired function by pressing the ⇧ or ⇩ button.

8 Press the MENU button.
The regular screen appears.

Erasing the Screen Display

You can erase a screen display with the menu when, for example, it is hard to see the image that is hidden behind the screen display. The printer operation is identical, regardless of whether screens are displayed. The same messages are displayed in the printer window display. The printer window display is equipped with the models other than UP-2300P.
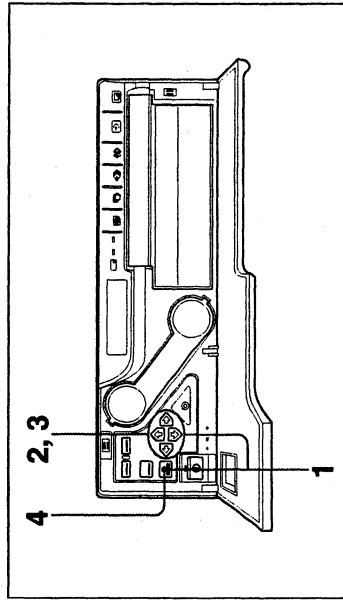
1 Press the MENU button, then select OUTPUT SETUP menu by pressing the ⇧ or ⇩ button.

```
OUTPUT SETUP COLOR nnn
▶/COL/LAY/PRN/IN/OUT/
 DISPLAY    :OFF/ON
 SOURCE     :THRU/EE
 SYNC ON G  :OFF/ON
 MONI C-R  : 0  ───┼───
 MONI M-G  : 0  ───┼───
 MONI Y-B  : 0  ───┼───

Q1 A1        2HF          s
```

Switch OUT to green by pressing the ⇧ or ⇩ button. OUTPUT SETUP menu appears.

```
OUTPUT SETUP
/c/l/p/i/OUT/
```

Display OUT in capital letters by pressing the ⇧ or ⇩ button. OUTPUT SETUP appears.

2 Select DISPLAY by pressing the ⇧ or ⇩ button.

```
OUTPUT SETUP COLOR nnn
/COL/LAY/PRN/IN/OUT/
▶DISPLAY    :OFF/ON
 SOURCE     :THRU/EE
 SYNC ON G  :OFF/ON
 MONI C-R  : 0  ───┼───
 MONI M-G  : 0  ───┼───
 MONI Y-B  : 0  ───┼───

Q1 A1        2HF          s
```

Position the cursor to DISPLAY by pressing the ⇧ or ⇩ button.

```
DISPLAY :   off/ON
```

Display DISPLAY by pressing the ⇧ or ⇩ button.

Setting Up the Printer (continued)

3 Select OFF by pressing the ⇦ or ⇨ button.

```
OUTPUT SETUP  COLOR nnn
/COL/LAY/PRN/IN/OUT/
DISPLAY  :OFF/ON
►SOURCE   :THRU/EE
SYNC ON G :OFF/ON
MONI C-R :   0    ┼┼┼┼
MONI M-G :   0    ┼┼┼┼
MONI Y-B :   0    ┼┼┼┼

Q1 A1      2HF            S
```

| SOURCE | : | thru/EE |

Display OFF in capital letters by pressing the ⇦ or ⇨ button.

Switch OFF to green by pressing the ⇦ or ⇨ button.

To display screen messages

Select ON in step 3.

Note

If you set the printer output signal specification to THRU (through), screen messages do not appear, even when you switch ON to green. However, error messages can appear at any time.

4 Press the MENU button.

The regular screen appears.

To temporarily erase the monitor display

When the MENU screen arrears: While the DISPLAY OFF button on the sub panel is held down, the screen display disappears, even if DISPLAY OFF is set to ON. Upon releasing the DISPLAY OFF button, the screen display appears again.

When the regular screen arrears: The screen messages switches on the and off whenever you press the DISPLAY OFF button, regardless of the menu setting on the OUTPUT SETUP menu.

Adjusting the Brightness of the Printer Window Display

When it is hard to read the contents of the printer window display, adjust the brightness with the menu.

The printer window display is equipped with the models other than UP-2300P.

7   2, 3, 4, 5, 6

1

1 Press the MENU button, then select PRINTER SETUP menu by pressing the ⇦ or ⇨ button.

```
PRINTER SETUP  COLOR nnn
►/COL/LAY/PRN/IN/OUT/
PRINT QTY :9  [1-9]
INTERVAL  :OFF/ON
GAMMA     :S/NORMAL/H
SYSTEM    :   PRESS[>]
FUNCTION  :   PRESS[>]

Q1 A1      2HF            S
```

Switch PRN to green by pressing the ⇦ or ⇨ button. PRINTER SETUP menu appears.

| PRINTER SETUP | | |
| /c/l/PRN/i/o/ | | |

Display PRN in capital letters by pressing the ⇦ or ⇨ button. PRINTER SETUP appears.

2 Select SYSTEM by pressing the ⇧ or ⇩ button.

```
PRINTER SETUP  COLOR nnn
/COL/LAY/PRN/IN/OUT/
PRINT QTY :9  [1-9]
INTERVAL  :OFF/ON
GAMMA     :S/NORMAL/H
►SYSTEM    :   PRESS[>]
FUNCTION  :   PRESS[>]

Q1 A1      2HF            S
```

Position the cursor to SYSTEM by pressing the ⇧ or ⇩ button.

| SYSTEM | : | PRESS[>] |

Display SYSTEM by pressing the ⇧ or ⇩ button.

Setting Up the Printer (continued)

3 Press the ⇔ button.
The SYSTEM SETUP menu appears.

SYSTEM SETUP

```
SYSTEM SETUP  COLOR nnn
▶PRN SETUP :PRESS [>]
 LCD-CNTR. : 7
 BAUDRATE :/24/4800/96
 BEEP     :OFF/ON
 APPLI.   : STANDARD

Q1 A1      2HF        S
```

4 Select LCD CNTR. by pressing the ⇧ or ⇩ button.

```
SYSTEM SETUP  COLOR nnn
 PRN SETUP :PRESS [>]
▶LCD-CNTR. : 7
 BAUDRATE :/24/4800/96
 BEEP     :OFF/ON
 APPLI.   : STANDARD

Q1 A1      2HF        S
```

Position the cursor to LCD CNTR. by pressing the ⇧ or ⇩ button.

LCD-CNTR. : 7

Display LCD CNTR. by pressing the ⇧ or ⇩ button.

5 Adjust the brightness of the printer window display by pressing the ⇔ or ⇔ button.

LCD-CNTR. : 5
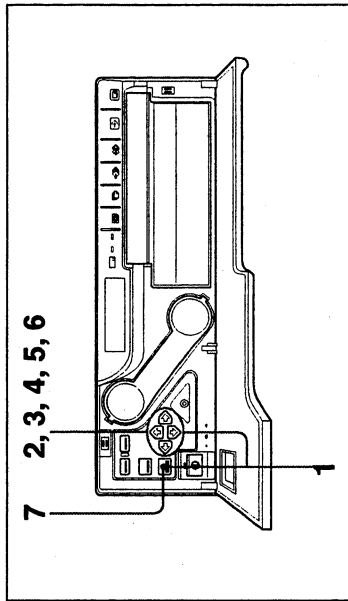
The number increases and the contrast increases every time the ⇨ button is pressed. The number decreases and the contrast decreases every time the ⇦ button is pressed.

```
SYSTEM SETUP  COLOR nnn
 PRN SETUP :PRESS [>]
▶LCD-CNTR. : 5
 BAUDRATE :/24/4800/96
 BEEP     :OFF/ON
 APPLI.   : STANDARD

Q1 A1      2HF        S
```

6 Select PRN SETUP by pressing the ⇧ or ⇩ button, then press the ⇨ button. The adjusted values are stored. The PRINTER SETUP menu appears.

7 Press the MENU button.
The regular screen appears.

Selecting Whether the Operation and Error Tones Sound

Whenever you press a button on the front panel or sub panel, the operation tone sounds (one time). When an error occurs, the alarm tone sounds (three times). You can turn these tones on and off with menu.

7 2, 3, 4, 5, 6

1 Press the MENU button, then select PRINTER SETUP menu by pressing the ⇧ or ⇩ button.

PRINTER SETUP
/C/I/|PRN|/I/O/

Display PRN in capital letters by pressing the ⇧ or ⇩ button. PRINTER SETUP appears.

```
PRINTER SETUP  COLOR nnn
▶COL/LAY PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL  :OFF/ON
 GAMMA     :S/NORMAL/H
 SYSTEM    : PRESS[>]
 FUNCTION  : PRESS[>]

Q1 A1      2HF        S
```

Switch PRN to green by pressing the ⇧ or ⇩ button. PRINTER SETUP menu appears.

2 Select SYSTEM by pressing the ⇧ or ⇩ button.

```
PRINTER SETUP  COLOR nnn
 COL/LAY PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL  :OFF/ON
 GAMMA     :S/NORMAL/H
▶SYSTEM    : PRESS[>]
 FUNCTION  : PRESS[>]

Q1 A1      2HF        S
```

SYSTEM   PRESS[>]

Display SYSTEM by pressing the ⇧ or ⇩ button.

Position the cursor to SYSTEM by pressing the ⇧ or ⇩ button.

Setting Up the Printer (continued)

3 Press the ⇔ button.
The SYSTEM SETUP menu appears.

SYSTEM SETUP

```
SYSTEM SETUP  COLOR nnn
▶PRN SETUP :PRESS [>]
 LCD-CNTR. : 7
 BAUDRATE  : /24/4800/96
 BEEP      :OFF/ON
 APPLI.    : STANDARD

Q1 A1       2HF        S
```

4 Select BEEP by pressing the ⇧ or ⇩ button.

BEEP : off/ON

```
SYSTEM SETUP  COLOR nnn
 PRN SETUP :PRESS [>]
 LCD-CNTR. : 7
 BAUDRATE  : /24/4800/96
▶BEEP      :OFF/ON
 APPLI.    : STANDARD

Q1 A1       2HF        S
```

Position the cursor to BEEP by pressing the ⇧ or ⇩ button.

5 Select whether the operation and error tones sound by pressing the ⇔ or ⇔ button.

BEEP : off/ON

```
SYSTEM SETUP  COLOR nnn
 PRN SETUP :PRESS [>]
 LCD-CNTR. : 7
 BAUDRATE  : /24/4800/96
▶BEEP      :OFF/ON
 APPLI.    : STANDARD

Q1 A1       2HF        S
```

Display the desired operation in capital letters by pressing the ⇔ or ⇔ button.

When selecting	Selection
To sound the tones	ON
To disable the tones	OFF

6 Select PRN SETUP by pressing the ⇧ or ⇩ button., then press the ⇔ button. The PRINTER SETUP menu appears.
The adjusted values are stored.

7 Press the MENU button.
The regular screen appears.

Setting the Baud Rate for Computer Communication

When controlling the printer with a computer connected to the printer's RS-232C connector, select the appropriate baud rate. For details, contact your nearest Sony dealer.

7   2, 3, 4, 5, 6

1 Press the MENU button, then select PRINTER SETUP menu by pressing the ⇧ or ⇩ button.

```
PRINTER SETUP  COLOR nnn
▶/COL/LAY/PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL  :OFF/ON
 GAMMA     :S/NORMAL/H
 SYSTEM    : PRESS [>]
 FUNCTION  : PRESS [>]

Q1 A1        2HF        S
```

Switch PRN to green by pressing the ⇧ or ⇩ button. PRINTER SETUP menu appears.

PRINTER SETUP
/c/i/PRN/i/o/

Display PRN in capital letters by pressing the ⇧ or ⇩ button. PRINTER SETUP appears.

2 Select SYSTEM by pressing the ⇧ or ⇩ button.

```
PRINTER SETUP  COLOR nnn
 /COL/LAY/PRN/IN/OUT/
 PRINT QTY :9 [1-9]
 INTERVAL  :OFF/ON
 GAMMA     :S/NORMAL/H
▶SYSTEM    : PRESS [>]
 FUNCTION  : PRESS [>]

Q1 A1        2HF        S
```

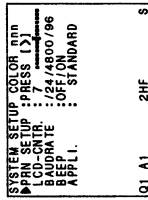Position the cursor to SYSTEM by pressing the ⇧ or ⇩ button.

SYSTEM PRESS[>]

Display SYSTEM by pressing the ⇧ or ⇩ button.

Precautions

Safety

- Operate the printer using the power source specified in "Specifications" (page 100)
- Be careful not to damage the power cable by placing or dropping heavy objects on it; it is dangerous to use the unit with a damaged power cable.
- If you do not intend to use the unit for a long time, disconnect the power cable.
- Unplug the power cable by grasping the plug, not the cable itself.
- Do not disassemble the unit.
- Do not remove the cover. There is a danger of electric shock from the internal parts.
- Be careful not to spill water or other liquids on the unit, or to allow combustible or metallic material to enter the cabinet. If used with foreign matter in the cabinet, the unit is liable to fail, or present a risk of fire or electric shock.
- Ventilation holes are provided to prevent the unit from overheating. Be careful not to obstruct them with other units or by covering the unit with a cloth etc.
- If the unit malfunctions or if a foreign body falls into the cabinet, disconnect the power immediately and consult your Sony service facility or your Sony dealer.
- Do not open the top cover of the printer during printing because of mechanical hazard. If you do, turn off the power switch first.

Installation

- Avoid placing the unit in a location subject to:
  — mechanical vibration
  — high humidity
  — excessive dust
  — direct or excessive sunlight
  — extremely high or low temperatures
- Do not use other electronic equipment near the unit. The unit will not work properly in strong electromagnetic fields.
- Do not place a heavy object such as a monitor on the printer.

Condensation

- If the printer is subject to wide and sudden changes in temperature, such as when it is moved from a cold room to a warm room or when it is left in a room with a heater that tends to produce large amounts of moisture, condensation may form inside the printer. In such cases the printer will probably not work properly, and may even develop a fault if you persist in using it. If condensation forms, turn off the power and leave the printer to stand for at least one hour.
- If the printing pack is subjected to wide and sudden changes in temperature, condensation may form on the ink ribbon or paper. This will cause the printer to malfunction. Also, if the printing pack is used in this state, spots are likely to appear on the printout. Therefore, avoid storing the printing pack in locations subject to wide and sudden changes of temperature.
- To store a half-used printing pack, replace it in its original packing and reseal the package. If possible, keep the sealed printing pack in a cool, dark location. To subsequently use the printing pack, place it, in its sealed package, in a warm room for several hours. Doing so prevents condensation from forming when the printing pack is removed from its package.

Setting Up the Printer (continued)

3 Press the ◇ button.
The SYSTEM SETUP menu appears.

```
SYSTEM SETUP COLOR nnn
▶PRN SETUP :PRESS [ ]
 LCD-CNTR.  : 7
 BAUDRATE   :/24/4800/96
 BEEP       :OFF/ON
 APPLI.     : STANDARD


 Q1 A1    2HF          s
```
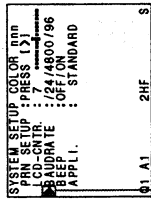
```
SYSTEM SETUP
```

4 Select BAUD RATE by pressing the ⬦ or ⬦ button.

```
SYSTEM SETUP COLOR nnn
 PRN SETUP :PRESS [ ]
 LCD-CNTR.  : 7
▶BAUDRATE   :/24/4800/96
 BEEP       :OFF/ON
 APPLI.     : STANDARD


 Q1 A1    2HF          s
```
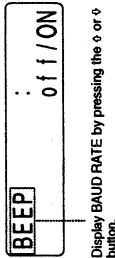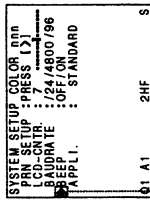
Position the cursor to BAUD RATE by pressing the ⬦ or ⬦ button.

```
BEEP
                  off/ON
```

Display BAUD RATE by pressing the ◇ or ◇ button.

5 Select the desired baud rate by pressing the ◇ or ◇ button.

```
SYSTEM SETUP COLOR nnn
 PRN SETUP :PRESS [ ]
 LCD-CNTR.  : 7
▶BAUDRATE   :/24/4800/96
 BEEP       :OFF/ON
 APPLI.     : STANDARD


 Q1 A1    2HF          s
```

Switch the desired baud rate to green by pressing the ◇ or ◇ button.

```
BAUDRATE
          12/24/4800/96
```
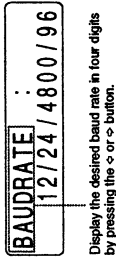
Display the desired baud rate in four digits by pressing the ◇ or ◇ button.

Baud rate (bps)	Baud rate displayed on the menu. (The display changes from upper-two digit indication to spelled-out indication.)
1200	12 → 1200
2400	24 → 2400
4800	48 → 4800
9600	96 → 9600

6 Select PRN SETUP by pressing the ⬦ or ⬦ button., then press the ◇ button. The adjusted values are stored. The PRINTER SETUP menu appears.

7 Press the MENU button.
The regular screen appears.

Precautions (continued)

Location

To prevent internal heat built-up, leave enough room around the printer for air to circulate through the vents on the left hand side of the cabinet.

On transportation

Do not transport the printer with the supplied accessories. Doing so may cause malfunction.

Cleaning

Clean the cabinet, panel and controls with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which may damage the finish.

Ink Ribbon Cartridge and Paper

Both paper and an ink ribbon cartridge are necessary for printing. Use the ink ribbon with the paper contained in the same package.

UPC-2010 Color Printing Pack

Contains color ink ribbon cartridge and paper.
Color ink ribbon cartridge 1 roll
A-6 (4 ¼ × 5 ¾ inches) size paper 200 sheets

Self-laminating Color Printing Pack UPC-2040A

Contains an ink ribbon cartridge and paper for automatic laminate coating.
Color ink ribbon cartridge 1 roll
A-6 size paper 120 sheets (The size is a little larger than paper of another printing pack).

16-split Self-adhesive Pre-cut Color printing pack UPC-20S16E

Contains an ink ribbon cartridge and paper for sticker of 16 reduced images.
Color ink ribbon cartridge 1 roll
A-6 (4 ¼ × 5 ¾ inches) size paper 200 sheets

4-split Self-adhesive Pre-cut Color printing pack UPC-20S04E

Contains an ink ribbon cartridge and paper for sticker of 4 reduced images.
Color ink ribbon cartridge 1 roll
A-6 (4 ¼ × 5 ¾ inches) size paper 200 sheets

Color Postcard Printing Pack UPC-2070E

Contains an ink ribbon cartridge and paper for post cards
Color ink ribbon cartridge 1 roll
A-6 size paper 150 sheets (The size is a little larger than paper of another printing pack).

B/W Printing Pack UPC-2020

Contains an ink ribbon cartridge and paper.
B & W ink ribbon cartridge 1 roll
A-6 (4 ¼ × 5 ¾ inches) size paper 200 sheets

Notes

- Use only the ink ribbon cartridge and paper designed for use with this printer. If you use a different type, the printer may not print properly or malfunction.
- Use the ink ribbon with the paper contained in the same package. If the printer detects an incompatible combination, an error message appears in the printer window display. Doing so may result in degradation of the print picture quality and occurrence of any trouble.
- Ink ribbon and paper are not reusable. Once exhausted, replace them with new ones.

About UPA-2002 paper tray (not supplied)

The paper size of the UPC-2040A self-laminating color printing pack and the UPC-2070E postcard color printing pack is a little larger than paper of other printing packs. The paper tray supplied with the printer is too small to load UPC-2040A and UPC-2070E paper.
To use these types of paper, the UPA-2002 paper tray (not supplied) is required.

Specifications

Power requirements
UP-2300P/2800P/2850P: 220 to 240 V AC, 50/60 Hz
UP-2900MD/2950MD: 120 to 240 V AC, 50/60 Hz

Power consumption
UP-2300P/2800P/2850P: About 1.0 A max. at 25°C, 240 V AC
UP-2900MD/2950MD: About 1.0 A max. at 25°C, 240 V AC
1.8 A max. at 25°C, 120 V AC

Operating temperature
5°C to 35°C (41°F to 95°F)

Operating humidity
20 % to 80 %
(no condensation allowed)

Storage and transport temperature
–20°C to 60°C (–4°F to 140°F)

Storage and transport humidity
20 % to 90 %
(no condensation allowed)

Dimensions
About 370 × 125 × 417 mm (w/h/d)
(14 5/8 × 5 × 16 3/4 inches)

Mass
About 14 kg (15 lb 14 oz)

Printing system
Sublimation heat transfer printing

Thermal head 12.2 dot/mm (1024 dots)

Total gradation
256 levels each for yellow, magenta, and cyan

Printing time
Approximately 35 seconds

TV system
UP-2300P/2800P/2850P: PAL B.G.I standards
UP-2900MD/2950MD: Selectable with the NTSC/PAL selector
In NTSC mode: NTSC/EIA standards
In PAL mode: PAL B.G.I standards

Input connectors
RGB SYNC (analog RGB signal):
BNC connector × 4 (for UP-2800P/2850P/2900MD/2950MD)
RGB: 0.7 Vp-p
SYNC: 0.3 to 4 Vp-p
75 ohms (terminated), sync negative

S VIDEO (Separate luminance (Y) and chrominance (C) signals):
4-pin mini-DIN × 1
Y: 1 Vp-p
C: For NTSC/EIA standards: 0.29 Vp-p color burst for PAL B.G.I standards: 0.3 Vp-p color burst
75 ohms (terminated), sync negative

VIDEO (NTSC composite video signal for NTSC/EIA standards and PAL composite video signal for PAL B.G.I standards):
BNC connector × 1
1 Vp-p, 75 ohms (terminated), sync negative

AC IN (for power input)

Output connectors
RGB SYNC (analog RGB signal):
BNC connector × 4 for UP-2800P/2850P/2900MD/2950MD)
RGB: 0.7 Vp-p
SYNC: 1 Vp-p
75 ohms (terminated), sync negative

S VIDEO (Separate luminance (Y) and chrominance (C) signals):
4-pin mini-DIN × 1
Y: 1 Vp-p
C: for NTSC/EIA standards: 0.29 Vp-p color burst for PAL B.G.I standards: 0.3 Vp-p color burst
75 ohms (terminated), sync negative

VIDEO (NTSC composite video signal for NTSC/EIA standards and PAL composite video signal for PAL B.G.I standards) BNC connector × 1
1 Vp-p, 75 ohms (terminated), sync negative

Controls connectors
REMOTE 1 : special mini jack × 1
For RM-5500 Remote Control Unit (not supplied)

REMOTE 2 (automatic printing connector): Stereo mini jack : × 1
For RM-91 Remote Control Unit or FS-20/36 Foot Switch (not supplied) (see "Selecting the Operation Mode for Automatic Printing Capabilities" page 85)

RS-232C (Computer control interface):
D-SUB 25-pin connector × 1
Output: 3 kilohms at load
Typ ± 8 V
Input: 5-kilohm load
High level 5 to 15 V
Low level –5 to –15 V

STROBE (× terminal): (only for UP-2300P)
(see "Output timing of synchronous signal for electronic flash)

Supplied accessories
Color printing pack (1)
Paper tray (1)
Paper cover (1)
AC power cord (1)
Warranty card (1)
(for UP-2900MD/2950MD)
Instructions for Use (1)

Optional accessories
UPC-2010 color printing pack
Self-laminating color printing pack UPC-2040A
16-split Self-adhesive Pre-cut color printing pack UPC-20516E
4-split Self-adhesive Pre-cut color printing pack UPC-20504E
Color Postcard printing pack UPC-2070E
B/W printing pack UPC-2020
UPA-2001 paper ejector
UPA-2002 paper tray
RM-5500 remote control unit
RM-91 remote control unit
FS-20 foot switch
FS-36 foot switch

Using the automatic printing capabilities (REMOTE 2)

If you send the remote control pulse signals illustrated through the REMOTE 2 connector, the printer is remotely controlled according to the remote control setting. (see page 85)
Turn on the power of the printer and display the source image on the monitor screen. Send a remote control pulse signal at the timing shown below.
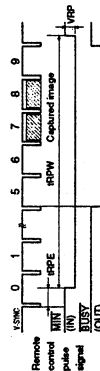The timing depends on the setting on item IMMED. CAP of the FUNCTION SETUP menu.

Remote 2 connector pin assignment
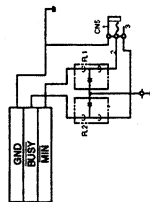
Note

The remote control pulse signal examples introduced here are one of the typical operation timing. The timing may be affected due to the selected memory page and print type.

When IMMED. CAP. is set to OFF

Notation	Parameter	MIN	TYP	MAX	Unit	Remarks
tRPE	Time within which a remote control pulse should be cleared to zero.	3	–	12	msec	–
tRPW	Length of a remote control pulse.	100	–	–	msec	–
VRP	Amplitude of a remote control pulse.	–	–	5	V	This value is based on TTL standards.

Specifications (continued)

Note

When AUTO LIVE of the FUNCTION-SETUP menu is set to OFF, the memory image is displayed on the screen after the image is captured in memory. In such a case, whenever you store the image, press the SOURCE/MEMORY button so that the source image appears on the video monitor. Displaying the memory image does not allow to capture the image with the correct timing.

When IMMED. CAP. is set to ON
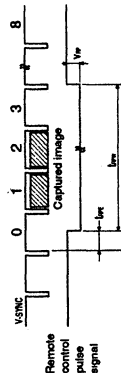
| Notation	Parameter	MIN	TYP	MAX	Unit	Remarks
tRPE	Time within which a remote control pulse should be cleared to zero.	3	—	10	msec	—
tRPW	Length of a remote control pulse.	100	—	—	msec	—
VRP	Amplitude of a remote control pulse.	—	5		V	This value is based on TTL standards.

Note

This mode is effective only the source image is displayed on the monitor screen. If the memory image is displayed, the image will not be captured even if the pulse is sent to the printer. Be sure to display the source image when sending the pulse.

Output timing of the synchronous signal for electronic flash
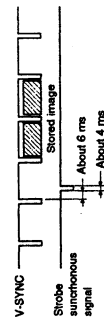
Design and specifications are subject to change without notice.

Error/Warning Messages

There are two kinds of messages: error messages and warning messages. This section lists these messages together with their possible causes and remedies. Note the messages and act accordingly.

Error messages

If a problem occurs, the ALARM lamp lights orange and an error message stating the problem appears on the monitor and in the printer window display.

Message		Possible cause and remedies
On the monitor	In the printer window display	
MECHA TROUBLE: HEAD	MECHA TROUBLE HEAD	• The ink ribbon cartridge is not loaded correctly. → Check the ink ribbon cartridge and load it correctly. (page 9) • The paper has jammed inside the printer. → Check the position where paper has jammed and remove any jammed paper from the printer. (page 105)
MECHA TROUBLE: TRAY	MECHA TROUBLE TRAY	The paper tray has got out of position. Contact your Sony service facility or your Sony dealer to clear error status.
MECHA TROUBLE: PLATEN	MECHA TROUBLE PLATEN	The paper has jammed inside the printer.
MECHA TROUBLE: LOAD	MECHA TROUBLE LOAD PAPER	→ Check the position where paper has jammed and remove any jammed paper from the printer. (page 105)
MECHA TROUBLE: EJECT	MECHA TROUBLE EJECT PAPER	
MECHA TROUBLE: CHUCK	MECHA TROUBLE CHUCK	
CHECK RIBBON	CHECK RIBBON	• The ink ribbon cartridge is defective. → Replace the defective ink ribbon cartridge with the new one. • The ink ribbon has torn. → Repair the tear. (page 11) • The ink ribbon cartridge that can not be used with this printer has been loaded. → Load the appropriate ink ribbon cartridge.
PAPER JAMMING	PAPER JAMMING	The paper has jammed inside the printer. → Check the position where paper has jammed and remove any jammed paper from the printer. (page 105)
SENSOR TROUBLE	SENSOR TROUBLE	Sensor trouble has occurred. The printer must not be operated any further. Turn off the power immediately and contact your Sony service facility or your Sony dealer.
REMOVE PAPER COVER	REMOVE PAPER COVER	The paper jammed around the top cover. Open the top cover and remove any jammed paper.
END OF RIBBON	END OF RIBBON	The ink ribbon has been exhausted. Replace the old one with a new ink ribbon cartridge. (see page 9) (The ink ribbon cannot be reused.)
INSERT RIBBON	INSERT RIBBON	The ink ribbon cartridge is not loaded. → Load the ink ribbon cartridge. (page 9)
SET PAPER	SET PAPER	• Paper has been exhausted. → Load the paper. (see page 12) • The paper tray is not installed. → Install the paper tray. (page 12)

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UP-2800 (E)

Error/Warning Messages (continued)

| Message		Possible cause and remedies
On the monitor	In the printer window display	
INSERT RIBBON AND PAPER	INSERT RIBBON SET PAPER	The ink ribbon cartridge and paper are not loaded. → Load the ink ribbon cartridge and paper. (pages 9 and 12)
REMOVE PRINTS	REMOVE PRINTS	The maximum number of printouts has accumulated on the paper cover. → Remove the printouts from the paper cover.
REMOVE PAPER: TRAY	REMOVE PAPER TRAY	The paper jams around the paper tray as it is being fed into the ribbon area. → Remove any jammed paper. (see page 105)
CLOSE COVER	CLOSE COVER	The top cover opens → Close the top cover.

Warning messages

In the case of a warning, only warning messages appear. The ALARM lamp does not light.

Warning message		Possible causes and remedies
On the monitor	In the printer window display	
PLEASE WAIT NOW PRINTING	PLEASE WAIT NOW PRINTING	The printer is printing, preventing any other operation. → Wait until the printer finishes printing, then retry the operation.
HIT ANY KEY	HIT ANY KEY	This message appears when the remote control unit is used in CAPTURE STOP mode and when the printer stops capturing images to memory pages once images have been captured to all memory pages. Printer operation is enabled after this. → Press any button.
INPUT MISMATCH	INPUT MISMATCH	• The TV system of the signal input from the source equipment (VTR, video camera and so on) is not compatible with the TV system of your printer. → Check the signal of TV system and input the correct one.
	INPUT ILLEGAL	• The signal other than the video signal (such as audio signal and similar) is input. → Input the correct video signal.
PLEASE WAIT RESERVED MEMORY	PLEASE WAIT RESERVED MEMORY	Printing is queued for the selected memory page. → Retry the operation once the printer finishes printing.
PLEASE WAIT PRINTING MEMORY	PLEASE WAIT PRINTING MEMORY	The image captured in the selected memory page is being printed. → Retry the operation once the printer finishes printing.
NO INPUT	NO INPUT	The printer is not receiving an input signal from equipment corresponding to the input selected on the INPUT SETUP menu. → Check the input signal selected on the INPUT SETUP menu. (page 14) → Check whether the video equipment is outputting a video signal in playback mode. → Check that the connections between signal source equipment and the printer are secure. (page 65)
NO IMAGE	NO IMAGE	The image is not captured in memory. → Capture the image in memory then start printing.
PLEASE WAIT HEAD IN COOLING	PLEASE WAIT HEAD IN COOLING	The thermal head has overheated. → Leave the printer until the head cools down and this message disappears. The printer starts printing automatically.
PLEASE WAIT SET IN COOLING	PLEASE WAIT SET IN COOLING	The inside of the printer has overheated. → Leave the printer until its inside cools down and this message disappears. The printer starts printing automatically.

If the paper jams

If the paper jams after pressing the PRINT button, the message stating that paper jammed appears on the video monitor and in the printer window display.
Follow the steps below to remove the jammed paper.
When the jammed paper is removed, you do not need to continue operation explained below. Stop operation and reset removed paper cover, paper tray or ink ribbon holder if any.

1 Open the front panel.

2 If any printouts have been ejected to the paper cover and have accumulated on the paper cover, remove them. If not go to the next step.

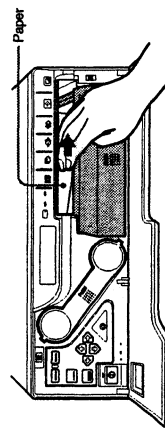
Printouts
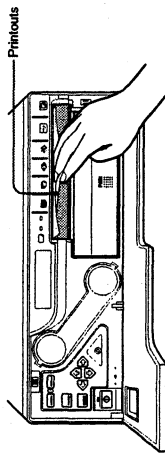
3 Turn off the power of the printer.

4 Remove the paper tray.
When you can see paper inside the printer, go to step 5.
When you cannot see paper, go to step 8.

5 Slowly pull the paper into the paper tray.
Note
Never attempt to pull a jammed paper down, up, backwards, or forwards. the paper may tangle or tear.
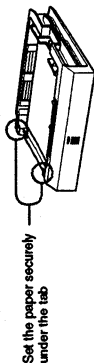If you cannot pull the paper, go to the next step.

Paper

6 Remove the paper tray.
If the paper has jammed around the slot where the paper is fed, remove it.

Error/Warning Messages (continued)

**7** Load the paper into the paper tray correctly.
Do not reuse the paper put back in step 5. Discard that paper.

Set the paper securely under the tab

8 Remove the ink ribbon cartridge.
If there is a jammed paper, slowly pull out the paper.
If the ink ribbon cartridge cannot be removed, the printer must not be operated. Contact your Sony service facility.

When you cannot see the jammed paper, go to step 9.

9 Open the top white cover, then the black cover.
If the paper has jammed inside, slowly pull the paper out.
If the jammed paper cannot be removed, the printer must not be operated. Contact your Sony service facility.

Open this cover, too
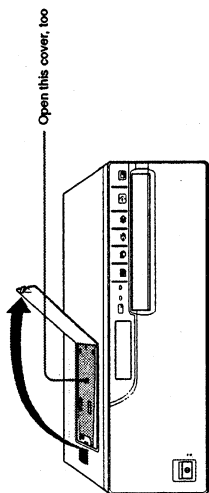
10 Re-insert the removed paper tray, paper cover or ink ribbon cartridge if you removed, then close the front panel.

11 Turn on the power of the printer.
When the message does not appear, you can use the printer as normal. However, the image captured to memory have been cleared. Capture the image to memory again.
If the same message appears again, the printer must not be operated. Turn off the power immediately and contact your Sony service facility.

Note
Do not open the top cover during printing because of mechanical hazard. If you do, turn off the power switch of the printer.

Troubleshooting

The following troubleshooting checks will help you correct the most common problems you may encounter with your unit. Before proceeding with these trouble checks, first check that the power cord is firmly connected. Should the problem persist, unplug the unit and contact your Sony dealer or local authorized Sony service facility.

Symptoms	Possible causes and remedies
Nothing appears on the monitor even if you press any operation buttons.	• The POWER switch of the printer is not set to ON. → Set the POWER switch of the printer to ON. • The POWER switch of the monitor is not set to ON. → Set the POWER switch of the monitor to ON. • Connections may not be correct. → Check connections and rectify, if necessary. (see page 65)
No message appears on the regular screen.	The incorrect signal is input. → Select another input signal by using the INPUT SETUP menu (see page 14) Or, set the connected video equipment to playback mode, if it is currently set to another mode such as stop mode. → In this case, first check the monitor by pressing the SOURCE/MEMORY button to display the image stored in memory. If an image appears, the monitor is working correctly.
No message or image appears on the regular screen.	If an image captured in memory appears when the SOURCE/MEMORY button is pressed, SOURCE on the OUTPUT SETUP menu is set to THRU. → Change the SOURCE setting to EE. (see page 72)
The printer does not print.	An error message appears on the display. → Perform the steps described in "Error Messages" on page 103.
A black line appears on the printout.	Any portion for which there is no signal is printed in black. → Shift the printout area. Capture a new image and print it. (see page 82)
The printer produces a printout with a black frame.	Any portion for which there is no signal is printed in black. → Make the printout narrower. Capture a new image and print it. (see page 82)
The printed image is partially cut out.	Only part of the video signal has been stored. → Make the printout size wider. (see page 82) Capture a new image and print it.
The printout is blurred.	A quickly moving image has been stored. → Set MEMORY on the LAYOUT SETUP menu to FIELD.
The printout color is very pale.	The paper is not loaded correctly. → Check which side of the paper is the printing side, then load the paper again. (see page 12).

Location and Function of Parts and Controls

Front

For details, refer to the pages given in parentheses.
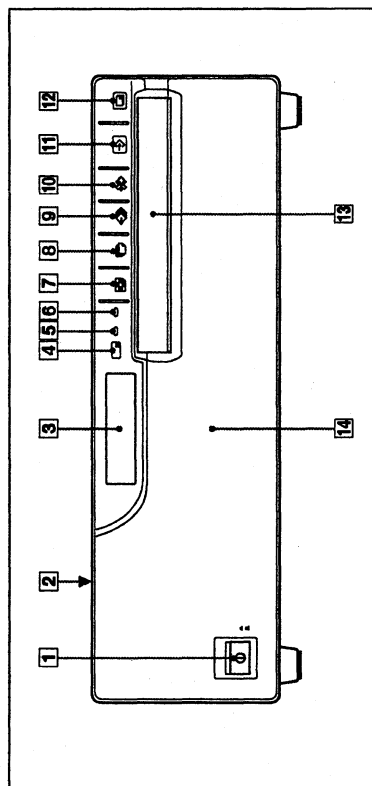

1 ① POWER switch (14)
Press to turn the printer on or off.

2 Top cover (on the top panel)
Usually, do not open this top cover. Only in case the paper has jammed inside the top cover, open the top cover to remove a jammed paper.
If you open the top cover, there is the other black cover.

3 Printer window display (only for UP-2800P/2850P/2900MD/2950MD)
Displays the messages that also appear along bottom edge of the monitor screen. Also displays the menu screen line to which the cursor is positioned. If an error occurs, a corresponding error message is displayed. The printer window display can be cleared with the SYSTEM SETUP menu.

4 Remote sensor (64)
Aim the head of the remote control unit toward this sensor.

5 PRINT lamp
Lights while the printer is printing.

6 ALARM lamp (103)
Lights in orange when the ink ribbon or paper is exhausted, the paper jams, or another problem occurs.

7 ⊟MULTI PICTURE button (35, 41, 48)
Press this button to select the desired printout type. When you press this button, the currently selected printout type lights green for two or three seconds. Each time you press this button, the type lights green in the order.
In FLEX IPP mode, this button is used to select the LOAD SIZE number to load the preset size of the image. When you press this button, the currently selected LOAD SIZE number lights green for two or three seconds. Each time you press this button, the LOAD SIZE number lights green in the order.

8 ⎙PRINT QTY (quantity) button (21)
Press this button to set the number of copies. You can set any number up to 9. You can change the number even when the printer is printing.
However, you cannot decrease the number of copies using this button. In such a case, reduce the number of copies on the PRINTER SETUP menu. (see page 19)

9 ◇MEMORY PAGE button (22, 31, 43, 48, 49, 60)
Press to select the memory page.

10 ◈SOURCE/MEMORY button (17, 40, 48, 49, 60)
Press to select which signal is to be output to the monitor.
The memory image and source image are toggled each time you press this button.

11 ↧ CAPTURE button (17, 22, 40, 41, 48, 49)
Press to capture an image to a memory page.

12 ⎙ PRINT button (17, 18, 23, 41, 43, 48, 49)
Press to make a printout.

13 Paper ejection slot
The printout is ejected here.

14 Front door
Pull the top on the front door toward you to open it.
Opening the front panel reveals the sub panel buttons, ink ribbon cartridge, paper tray and paper cover.

When the front panel is open
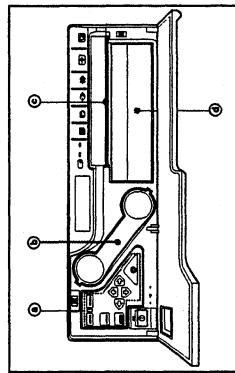
ⓐ Sub panel keys
For details, see "Sub Panel"

ⓑ Ink ribbon cartridge (9, 62)
Insert the ink ribbon cartridge.

ⓒ Paper cover (62)
Paper is ejected onto this cover.

ⓓ Paper tray (12, 62)
Load paper into this tray.

Location and Function of Parts and Controls (continued)

Sub Panel
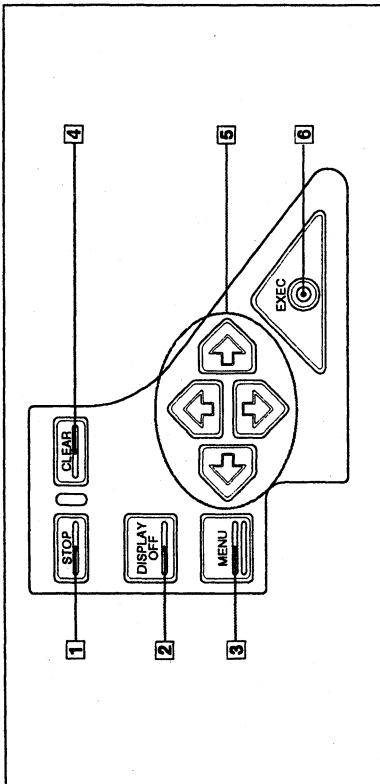
1 STOP button (18)
Press to stop printing midway. By pressing this button, the current printing complete and printing after this is cancelled.

2 DISPLAY OFF (18)
When the menu is displayed, pressing this button temporarily clears the menu display. While this button is held down, the menu display disappears.

When the regular screen is displayed, pressing this button toggles on and off of the screen display (such as messages, Q1, A and similar) regardless of setting of the item of DISPLAY on the OUTPUT SETUP menu.

3 MENU button
Press this button to display or clear the menus on the screen and printer window displays.

4 CLEAR button (59, 60)
Press this button to clear the images captured in the memory pages. Which images that can be cleared with the CLEAR button depends on the setting made with the FUNCTION SETUP menu.

5 Cursor keys
Use to select a desired item from the menu by pressing the ⇧ or ⇩ button and set the value by pressing the ⇦ or ⇨ button.

Also, these keys are used to position the cursor (green) on the regular screen.

6 EXEC button (52, 53, 55, 79)
Press this button to execute the values set with the COLOR ADJUST menu or to register a setting for the SAVE SIZE number on the SYSTEM SETUP menu. Also, this button is used to enter the characters of a caption.

Rear

UP-2900MD/2950MD

UP-2300P
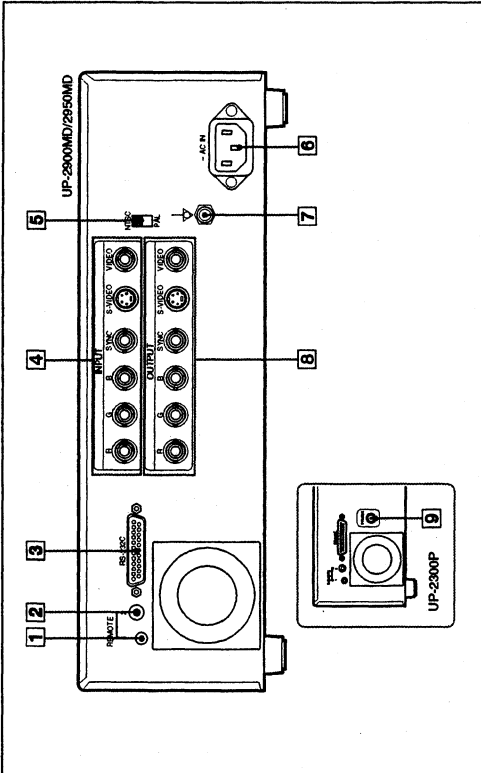
1 REMOTE 1 connector (special mini jack) (67)
Used to connect the RM-5500 Remote Control Unit (not supplied) to be used as wired remote control unit.

2 REMOTE 2 connector (stereo mini jack) (67, 101)
Used to connect the RM-91 Remote Control Unit (not supplied), the FS-20 or FS-36 Foot Switch. Or input remote control pulse signals for automatic printing.

3 RS-232C connector (67)
Used to connect the computer to control the printer. For details, contact your nearest Sony dealer.

4 INPUT (input signal) connectors (65)
Used to connect the video equipment supplying the source image.

Connector	Connectable equipment
S-VIDEO	Video equipment with Y/C separated output connector.
VIDEO	Video equipment with composite video signal output connector
RGB SYNC [a]	Video equipment with RGB/SYNC output connectors.

[a] Models other than the UP-2300P are equipped with the RGB/SYNC connectors.

Refer to "Important safeguards/notices for use in the medical environments" on page 2.

Location and Function of Parts and Controls (continued)

5 NTSC/PAL (NTSC/PAL TV) selector (only for UP-2900MD/2950MD) (65, 66)
Set this selector according to the TV system of the input signal. If you change this setting, turn the printer power off, then back on again.

Selector position	When setting
NTSC	The NTSC system video equipment is connected.
PAL	The PAL system video equipment is connected.

6 ~ AC IN connector
Used to connect the printer to a wall outlet with the supplied power cord.

7 Equipotential ground terminal connector ♁ (for models other than UP-2300P)
Used to connect to the equipotential plug to bring the various parts of a system to the same potential.
Refer to "Important safeguards/notices for use in the medical environment" on page 2.

8 OUTPUT connectors (66)
Used to connect the video monitor.

Connector	Connectable equipment
S-VIDEO	Video equipment with Y/C separated output connector.
VIDEO	Video equipment with composite video signal output connector
RGB SYNC	Video equipment with RGB/SYNC output connectors.a)

a) Models other than the UP-2300P are equipped with the RGB/SYNC connectors.

Refer to "Important safeguards/notices for use in the medical environment" on page 2.

9 STROBE (X-terminal) (only for UP-2300P)
Used to connect to an electronic flash which lights at instance the image is captured in the memory.

Monitor Display

There are two types of display: the regular screen display and menu screen display.
The two types of display are explained using the monitor display.

Regular screen display

When you first turn on the printer, the regular screen message appears.
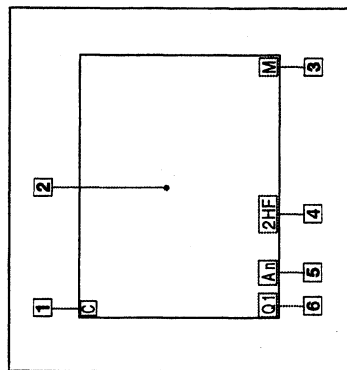
4 Printer operation mode display section

Display	Meaning
1, 2, 2H, 4, 16	Indicates the printout type in STANDARD mode.
2 * 2, etc.	Indicates the number of images to be printed in one(2 * 2) in this case, four images are printed in one paper) in FLEX IPP mode.
IPP1, IPP4, etc.	Indicate the printout type in FLEX IPP.
STK-DUP4, STK-DUP16	Indicates the sticker mode in which identical four- or 16-reduced images are printed in one paper in DTIK DUP mode.
STK-DIF4, STK-DIF16	Indicates the sticker mode in which different four- or 16-reduced images are printed in one paper in DTIK DIF mode.

a) When the SEPARATE (image with the white borders) is set to ON on the LAYOUT SETUP menu, F is attached. For example, 4F.

5 Memory page display section
Indicates the currently selected memory page. While the image in the memory page is being printed, the memory page indication blinks. The memory page whose memory image is queued to be printed lights in green.

6 Q (print quantity) display
Indicates the number of copies to be printed. This item blinks while the printer is busy.

1 C (Caption) display section
C is displayed in white when the printer is set to print a caption consisting of the date and/or comments.

2 Message display section
Messages are displayed.
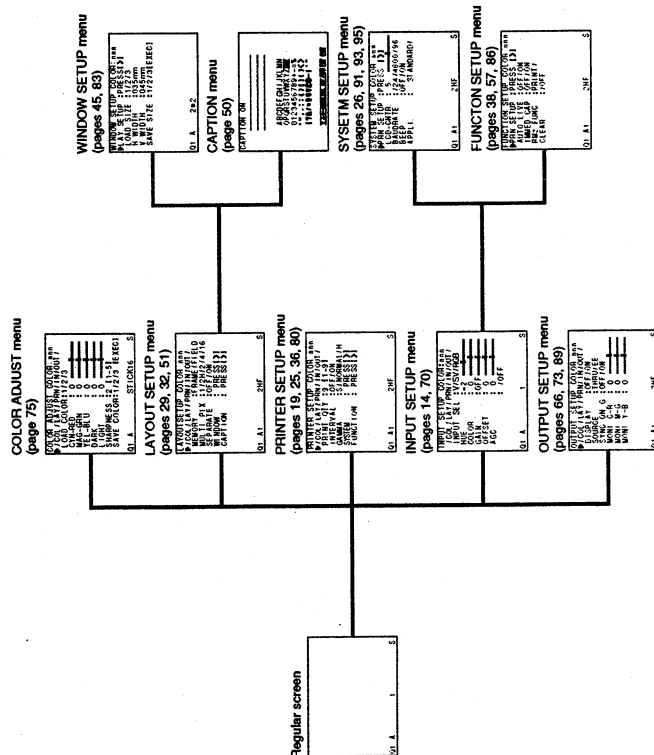
3 S or M (image type) display section
This indicates the type of image being displayed on the monitor screen.
S (Source): The image from the input signal source is displayed on the screen.
M (Memory): The image stored in memory is displayed on the screen.

1-57

Others | 115

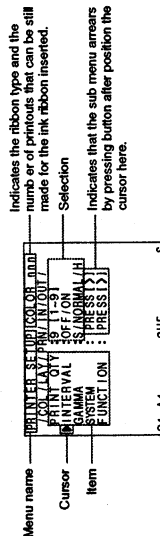## Location and Function of Parts and Controls (continued)

Menu screen
Menu screen tree chart

The menu screen configuration is shown using the tree-chart. For details, refer to the pages indicated in ( ).

COLOR ADJUST menu (page 75)

WINDOW SETUP menu (pages 45, 83)

CAPTION menu (page 50)

LAYOUT SETUP menu (pages 29, 32, 51)

SYSTEM SETUP menu (pages 26, 91, 93, 95)

PRINTER SETUP menu (pages 19, 25, 36, 80)

FUNCTION SETUP menu (pages 38, 57, 86)

INPUT SETUP menu (pages 14, 70)

OUTPUT SETUP menu (pages 66, 73, 89)

Regular screen

Menu screen display

Example: SYSTEM SETUP menu screen

Menu name — Indicates the ribbon type and the number of printouts that can be still made for the ink ribbon inserted.

— Selection

Cursor — Indicates that the sub menu arrears by pressing button after position the cursor here.

Item

UP-2800 (E)

SECTION 2
SERVICE INFORMATION

2-1. BOARD LAYOUT

VA-181 board

IF-710 board
(UP-2300/2300P)
IF-672 board

FMY-21 board

KY-402 board

∗CN-1520 board

SY-250 board

Switching regulator

KY-401 board

∗Except UP-2300/2300P

SU-37 board

SE-417 board   PRT-11 board

SE-422 board   SE-419 board

SU-36 board   SU-39 board

SE-420 board   SE-418 board

Thermal head

SE-427 board

∗LCD module

SE-423 board   SE-430 board

SE-425 board   SE-429 board

SE-426 board

SE-424 board   SU-38 board

SE-428 board

∗Except UP-2300/2300P

2-2. DISASSEMBLY

2-2-1. Removal of the Top cover

Top cover   M3 case fixing screw

M3 case fixing screw

M3 case fixing screw
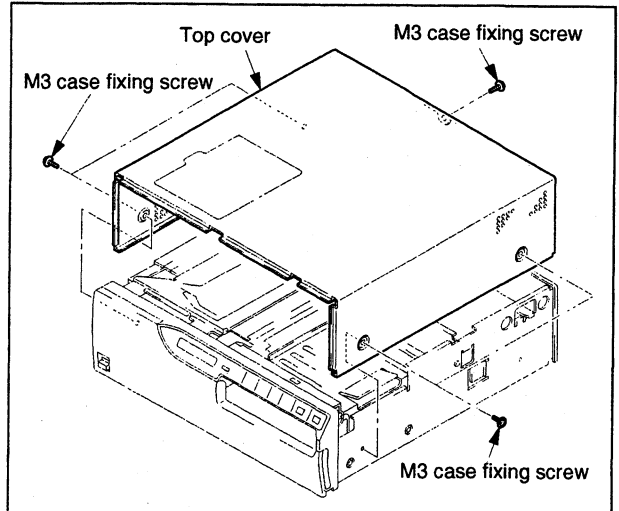
2-2-2. Removal of the Front Panel Assembly

1.

Front door

A

Cartridge assembly

Eject tray

B
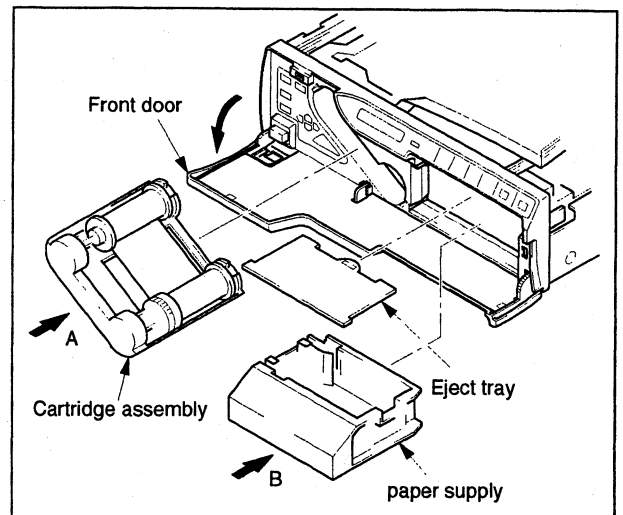
paper supply

Note : Push the cartridge assembly and paper supply
tray in the direction indicated by arrow A or
B, then take out them.

2.
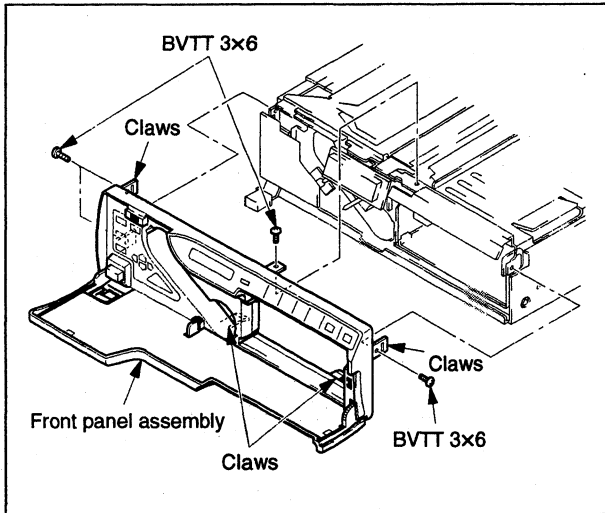
Note : **Remove the four claws, the remove the front panel assembly.**

2-2-3. Removal of the VA-181 board
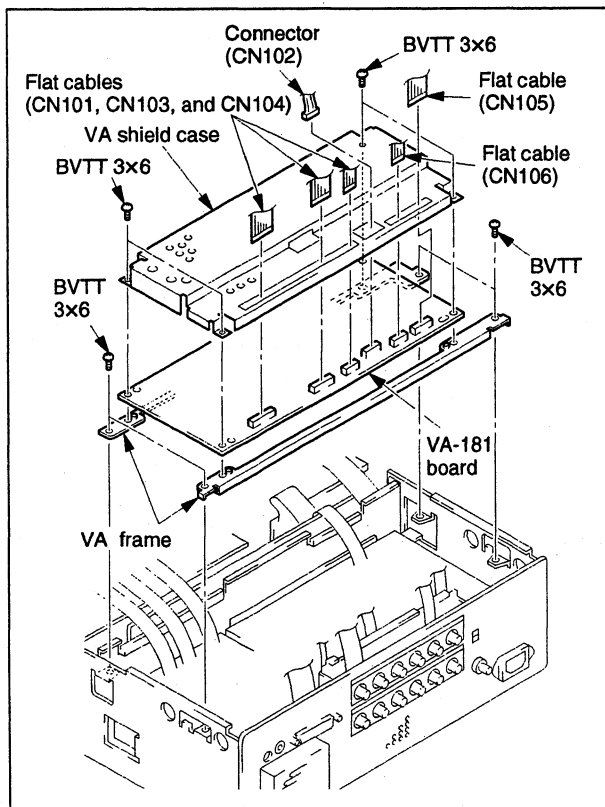
Note : **VA shield case is only part for UP-2300P, UP-2800P, UP-2850P, UP-2900MD and UP-2950MD.**

2-2-4. Removal of the FMY-21 Board
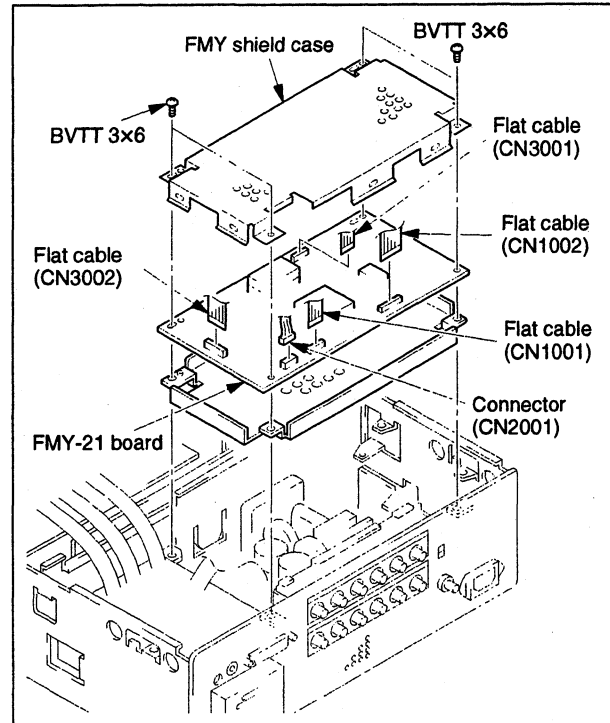
Note : **FMY shield case is only part for UP-2300P, UP-2800P, UP-2850P, UP-2900MD and UP-2950MD.**

2-2-5. Removal of the SY-250 Board

Flat cables
(CN1001, CN1002, and CN1003)

BVTT 3×6

Flat cables
(CN1004 and CN1005)

SY-250 board

Hexagon setscrew

BVTT 3×6
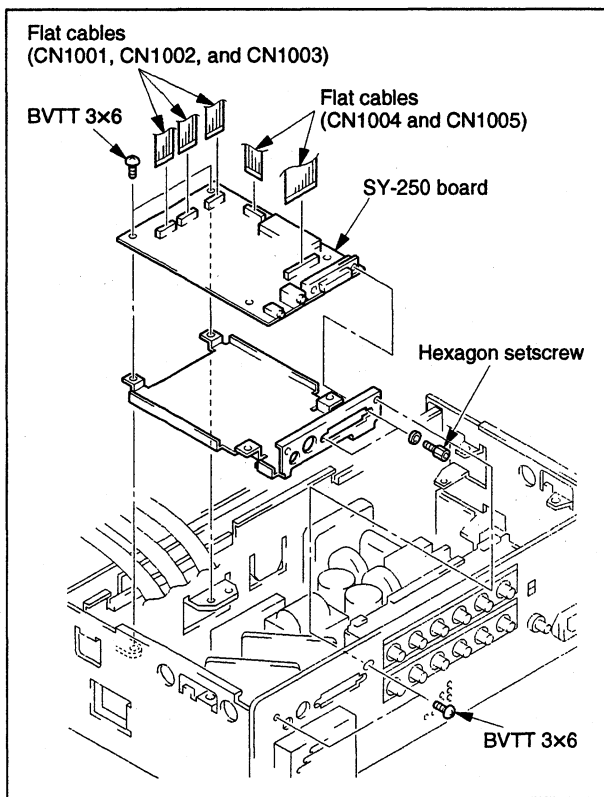
2-2-6. Removal of the IF-672 Board (IF-710 Board)

IF cover

Flat cable
(CN101)

Flat cable
(CN201)

IF-672 board
(IF-710 board)

BVTT 3×6

BV 3×8

2-2-7. Removal of the DC Fan (1)

Hook

Connector (CN6)

DC fan (1)

Hook

Fan cover

B 4×20
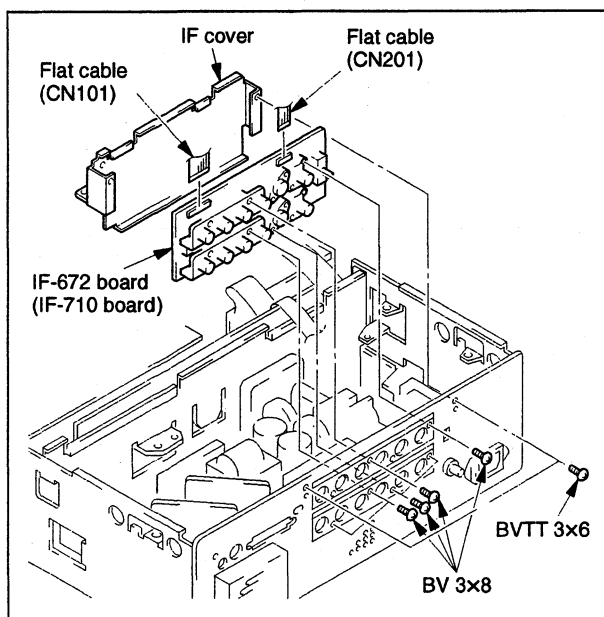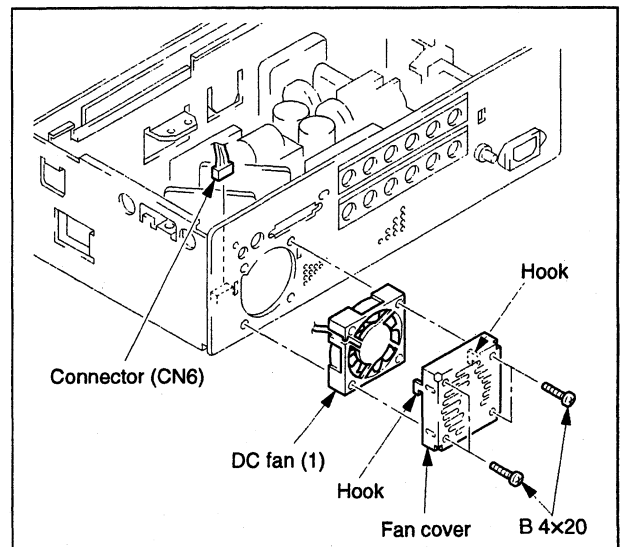
2-2-8. Removal of the Rear Panel

Rear panel

BVTT 3×6

BVTT 3×6
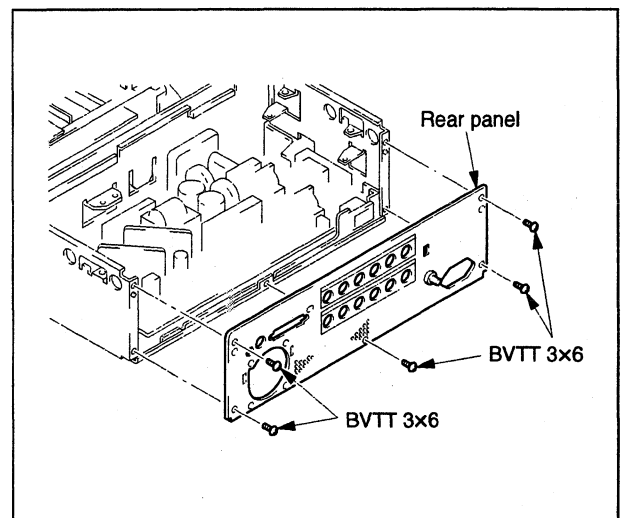
2-2-9. Removal of the Switching Regulator

1.

Power switch rod

Rod stopper

2.

Connector (CN002)

Connectors (CN5, CN001, CN003, and CN004)

Switching regulator

PS 3×6

Hook

PS 3×6
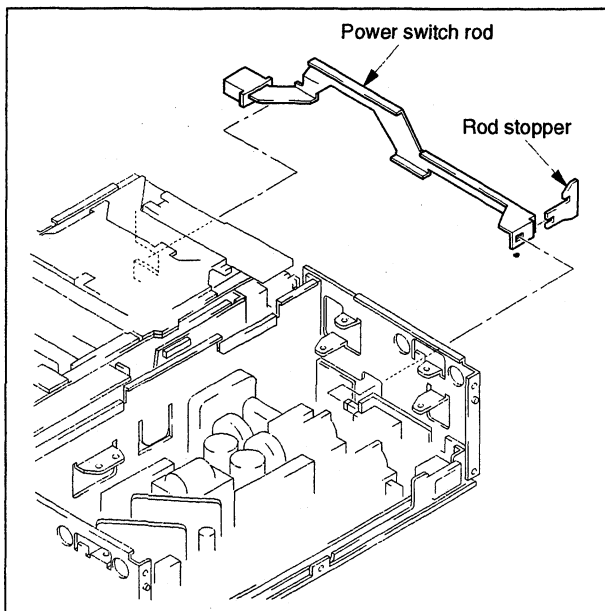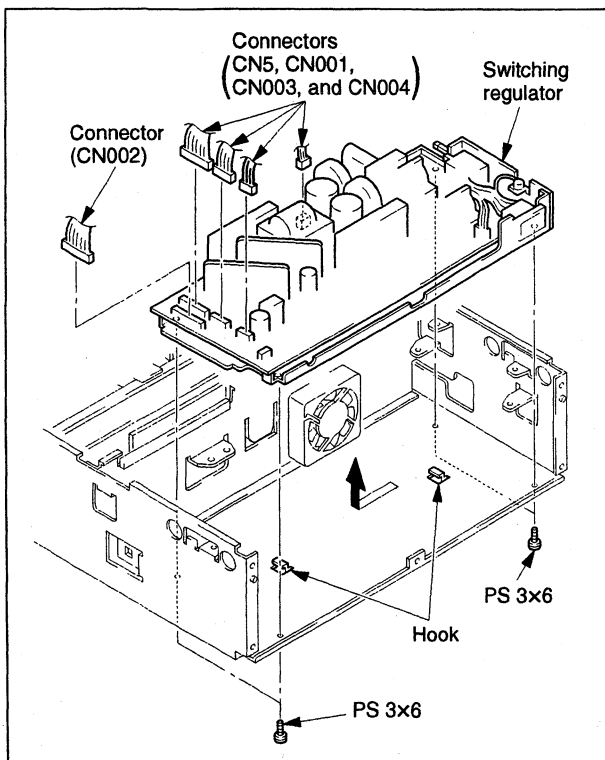
2-2-10. Removal of the DC Fan (2)

DC fan (2)   B 4×20
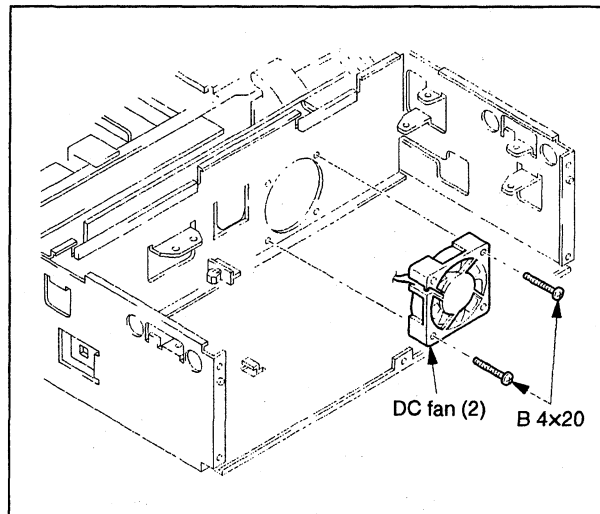
2-2-11. Removal of the Mechanical Block

BVTT 3×6

LCD

Flat cables (CN007)

Connector (CN001)

Flat cables (CN007)

Connector (CN002)

Flat cables (CN1)

BVTT 3×6

Mechanical block

BVTT 3×6

BVTT 3×6

2-4

UP-2800 (E)
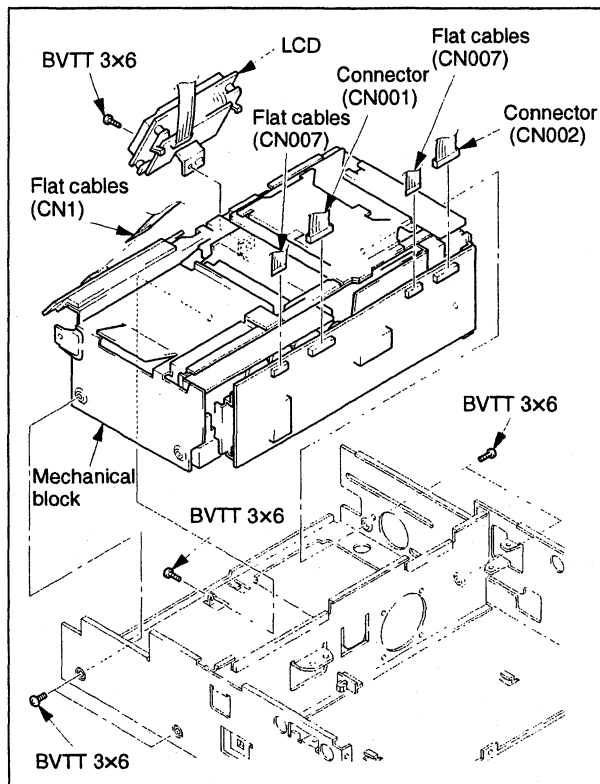
2-2-12. Removal of the PRT-11 Board

Flat cables (CN009)
Connectors (CN012 and CN016)
Flat cables (CN008)
Connector (CN017)
BVTT 3×6
Board supporter
PRT-11 board
BVTT 3×6
A
Flat cables (CN003 - CN005)
Connectors (CN011, CN013, - CN015)
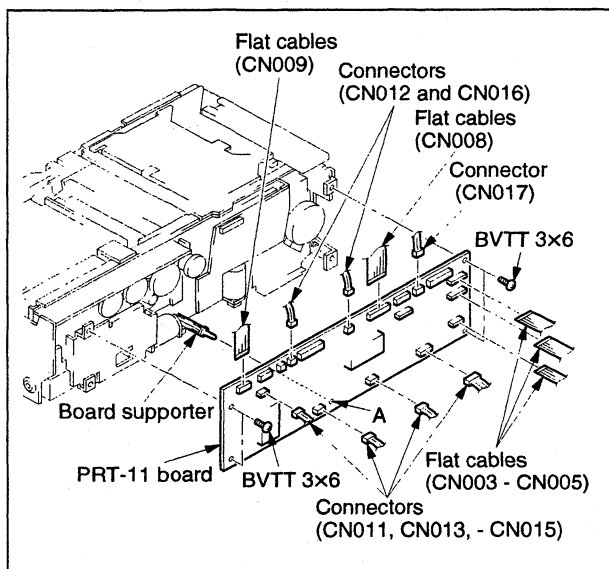
Note : When installing the PRT-11 board, insert the board supporter to the hole A of the board.

2-2-13. Removal of the Tray Motor

1.

Tray motor assembly
Hook
BVTT 3×6

2.

Motor shaft
TM worm wheel
Retaining ring (2.3 mm dia)
PS 3×4
Tray motor
Worm gear assembly
Worm shaft cap
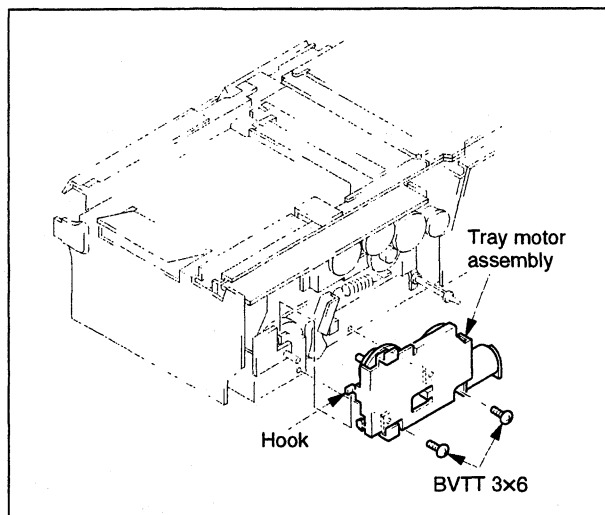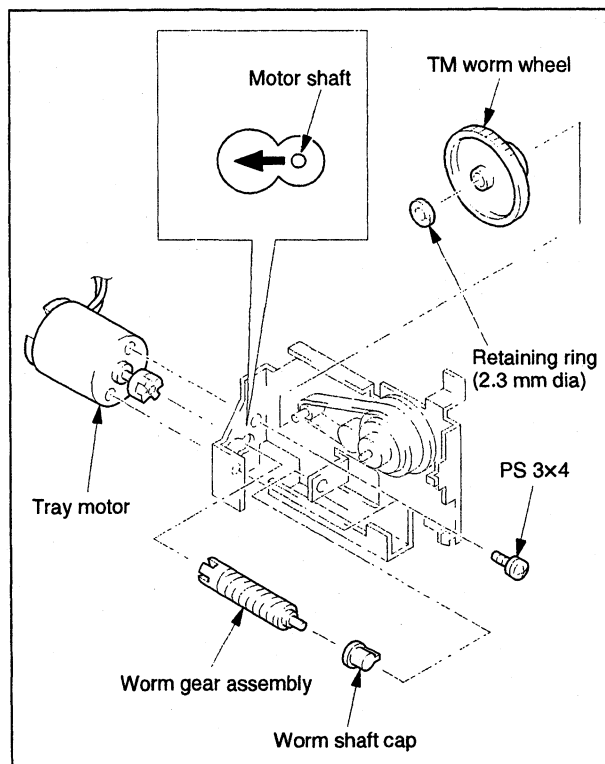
2-2-14. Removal of the SE-418 Board and Paper Supply Motor

1.

Connectors (CN101 and CN102)
BVTT 3×6
Connectors (CN103 and CN104)
SE-418 board
A
SE-428 board
Paper supply motor assembly
BVTT 3×6
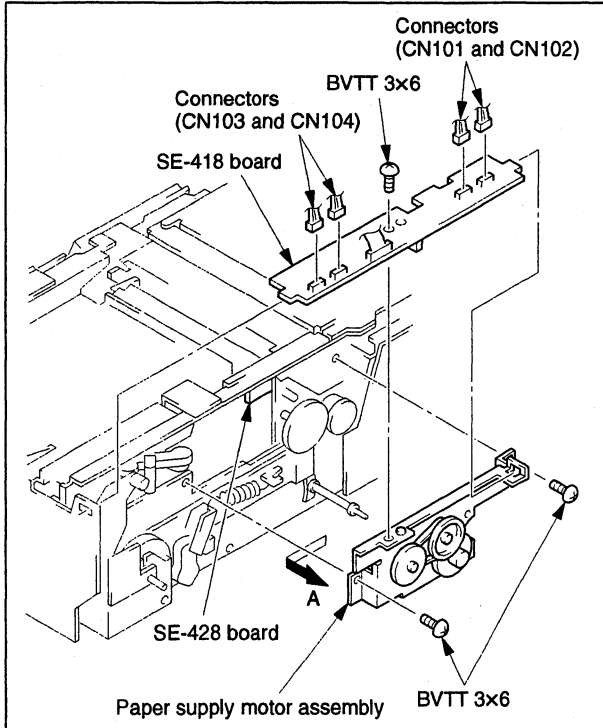
Notes : When removing the paper supply motor assembly, remove it in the direction indicated by arrow A so as not to strike the SE-428 board.
When reattaching it, approach it to the left down side and tighten the screws.

2.

Motor shaft
Paper supply motor
FG fin
PS 2.6×4
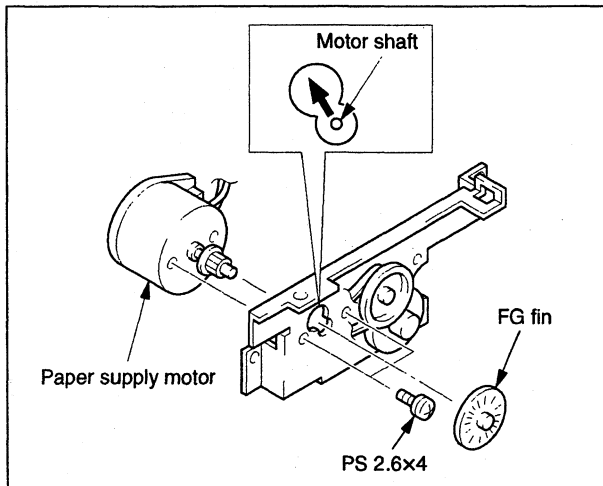
2-2-15. Removal of the Ribbon Motor

1.

Ribbon motor assembly
Connectors (CN3 and CN4)
BVTT 3×6
Connector (CN1)
Connectors (CN2, CN5, and CN6)
BVTT 3×6

2.

PS 3×4
Ribbon worm wheel
Retaining rings (2.3 mm dia)
Ribbon idler gear
Worm shaft cap
Worm gear assembly
Motor shaft
Ribbon motor
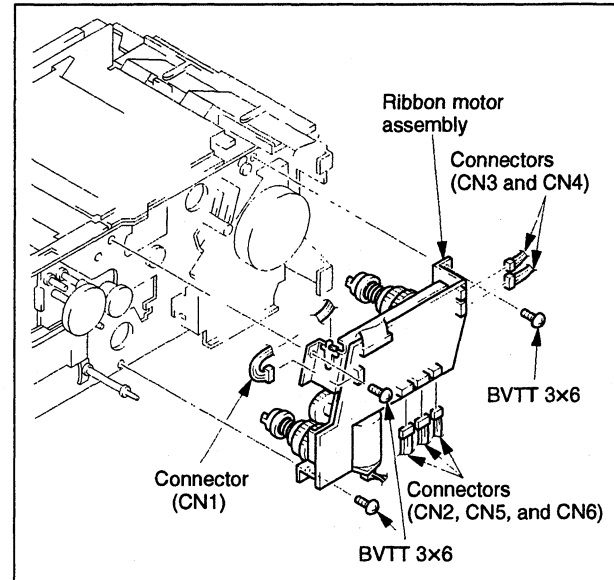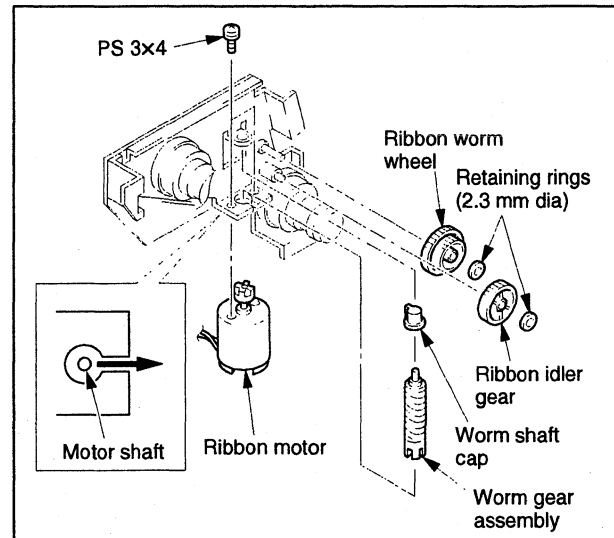
2-2-16. Removal of the Stepping Motor

Stepping motor

BVTT 3×6
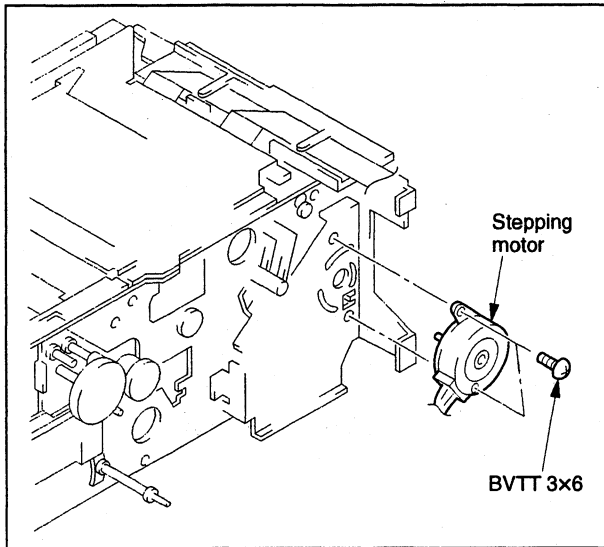
2-2-17. Removal of the Load Block Assembly

1.

BVTT 3×6

Hooks

Clamp harness

Harness

BVTT 3×6

Eject base

Hooks

A

B
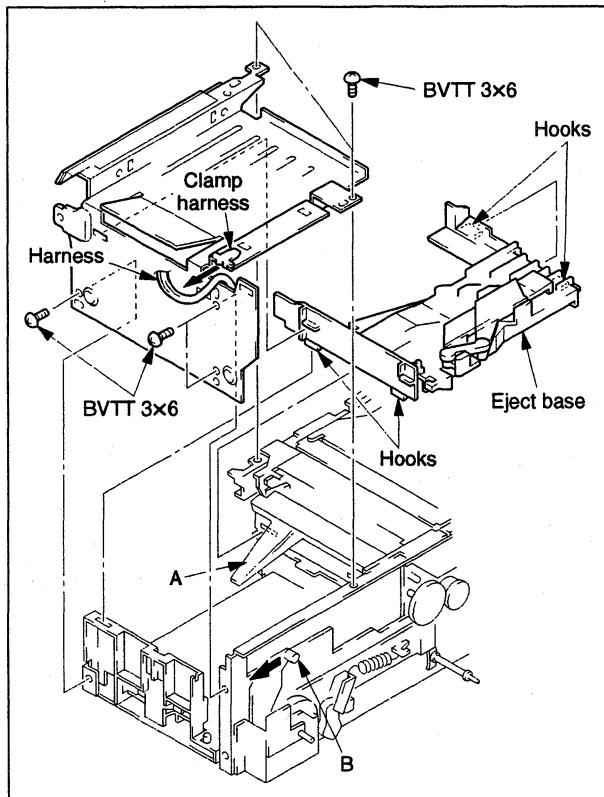
Note : 1. When removing or attaching the eject base, perform it while portion A is lifted.

2. When attaching the eject base, push portion B in the direction shown by the arrow.

2.

BVTT 3×6

BVTT 3×6

BVTT 3×6

Mechanical chassis T

BVTT 3×6

Paper Supply block assembly

SE-419 board

A

Screw for retaining the SE-419 board

Link joint plate

BVTT 2.6×4
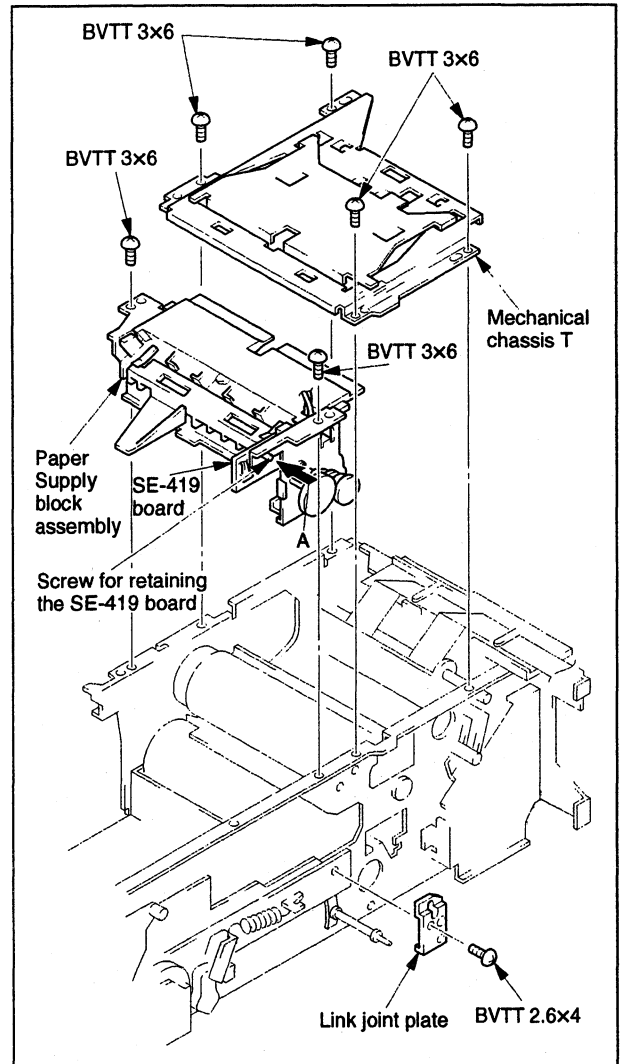
Note : When removing paper supply block, remove the screw for retaining the SE-419 board while pushing it in the direction shown by the arrow.

2-2-18. Removal of the Head Motor

1.

Harness clamp
Harness
Flat cables
Harness clamp
KY-402 board
Head sensor holder
Stopper rings

3.

Head motor
PS 3×4
Motor shaft

2.

Tension coil spring
BVTT 3×6
Hook
BVTT 3×6
Head motor assembly
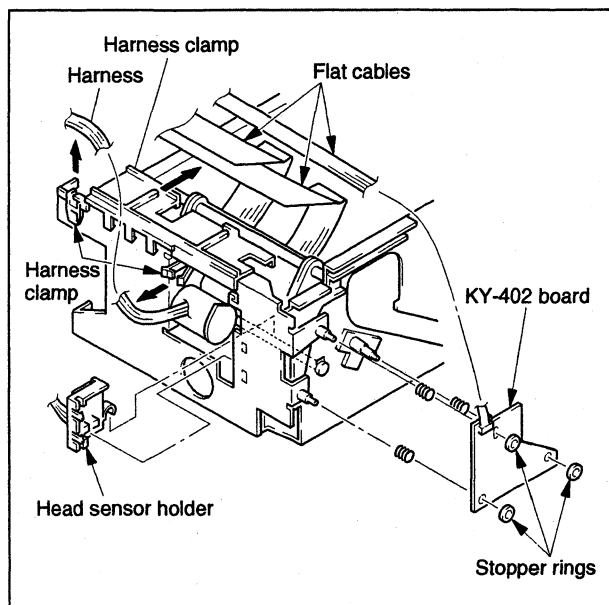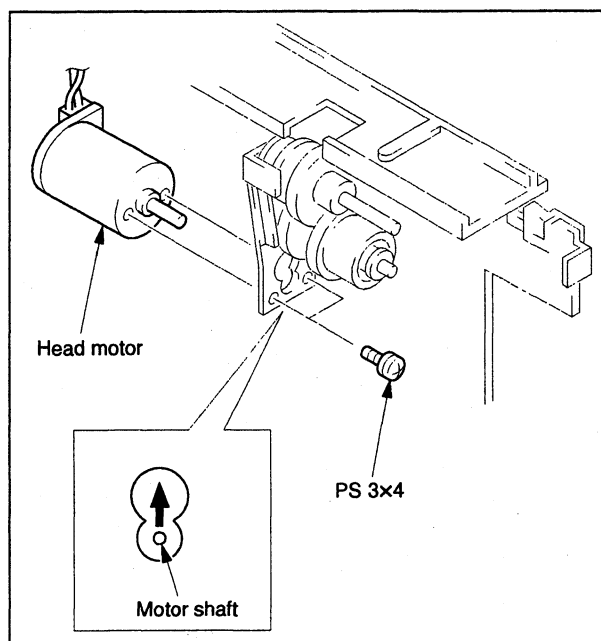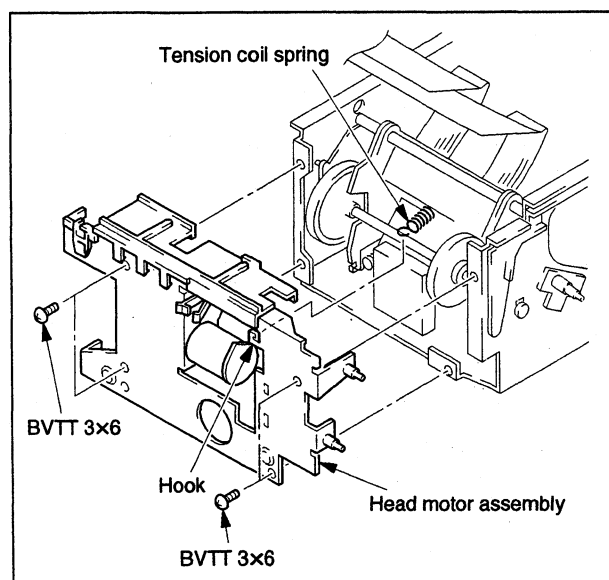
2-2-19. Removal of the DC Fan (3)

DC fan (3)
PS 3×12
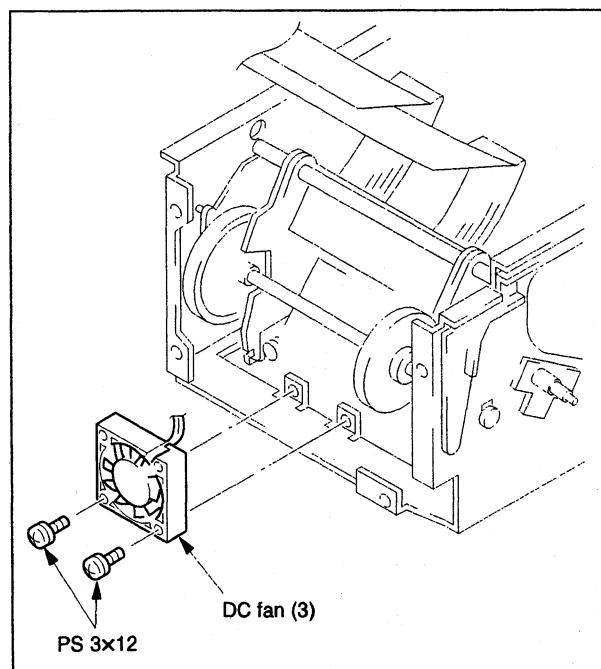
2-3. REPLACEMENT OF THERMAL HEAD

1.

<Rear of Mechanical block>

Bottom lid of
mechanical chassis

BVTT 3×6

PSW 3×6

BVTT 3×6

Claw   Heat sink

Head presser

Flat cables

2.

PSW 3×6
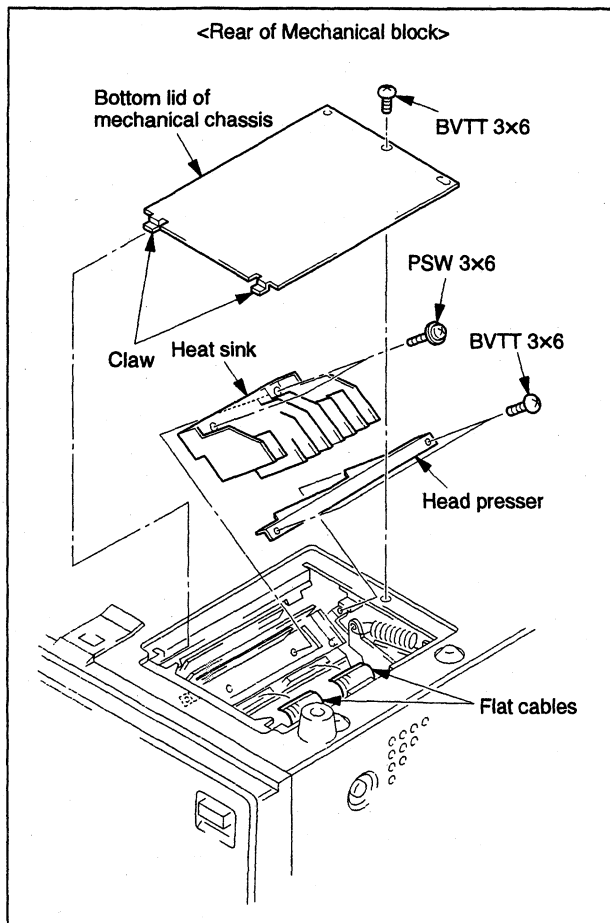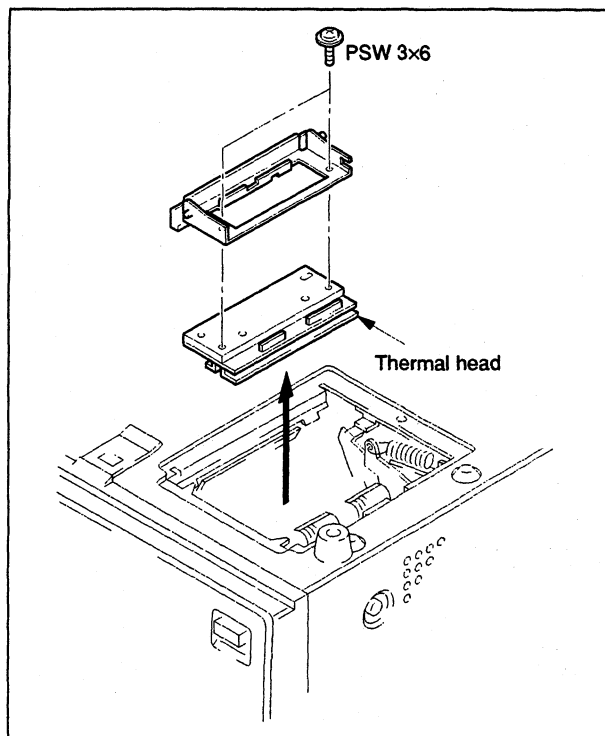
Thermal head
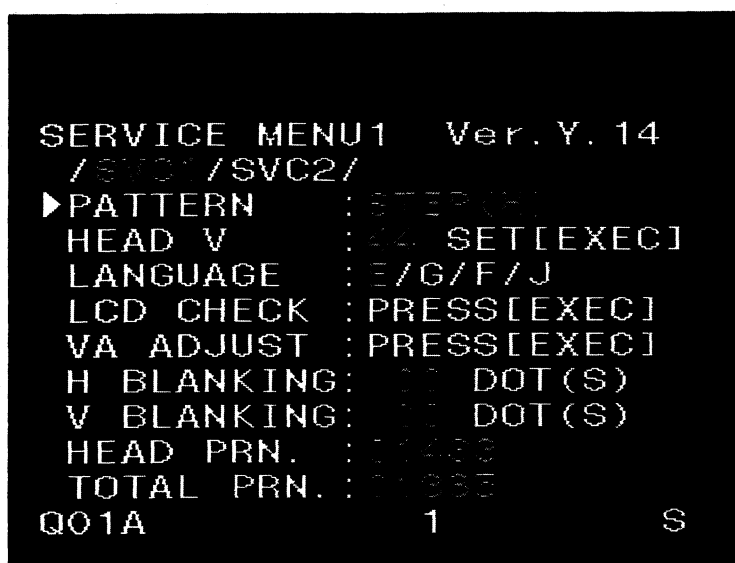
SECTION 3
ELECTRICAL AND MECHANICAL ALIGNMENT

3-1. ELECTRICAL ADJUSTMENT

3-1-1. Outputting the Test Pattern in the Service Mode

This mode is used when the VA-181 board, FMY-21 board, thermal head, and parts
are replaced.

1. Set the ribbon and paper.
2. Turn on the power switch to enter the service mode while pressing the $\leftarrow$ and $\rightarrow$ keys
   simultaneously.
3. Move the cursor to the PATTERN: item.
4. Set the necessary pattern name using $\leftarrow$ and $\rightarrow$ keys.
5. Press the EXEC key. The test pattern is then displayed on the monitor.

```
SERVICE MENU1   Ver.Y.14
/     /SVC2/
▶PATTERN     :
 HEAD V      :      SET[EXEC]
 LANGUAGE    :  /G/F/J
 LCD CHECK   : PRESS[EXEC]
 VA ADJUST   : PRESS[EXEC]
 H BLANKING:       DOT(S)
 V BLANKING:       DOT(S)
 HEAD PRN.   :
 TOTAL PRN. :
 QO1A             1            S
```

Notes:
1. In the state when an error (no paper or ribbon) occurs, the system starts with the error
   displayed.
   At that time, press the MENU key, press the $\leftarrow$ and $\rightarrow$ keys to display the service menu,
   and perform the operation described above.
2. This test pattern cannot be output in the MULTI PIX "2" state. In the state except MULTI PIX
   "1", a white frame may be contained in the print result of a test pattern. In this case, set MULTI
   PIX to "1" during print.

There are several types of test patterns. Four standard patterns are as follows:

① STEP(H)
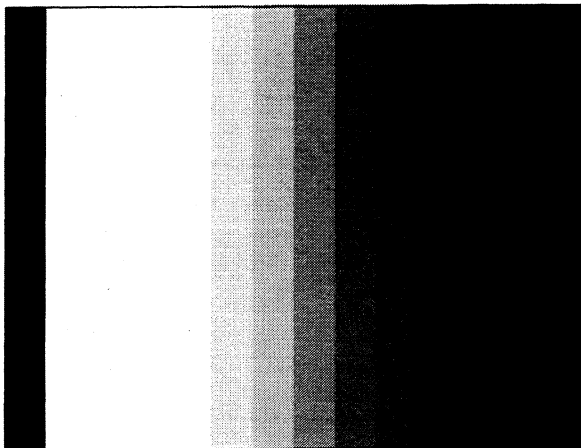
② STEP(V)
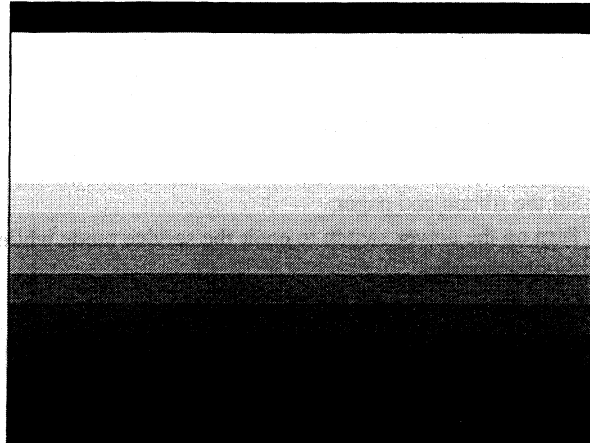
③ RAMP(H)
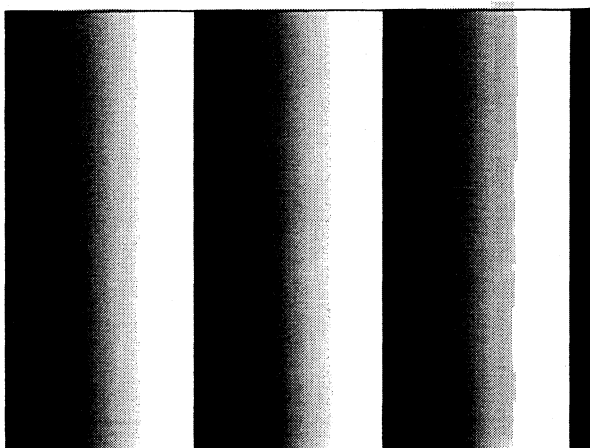
④ RAMP(V)
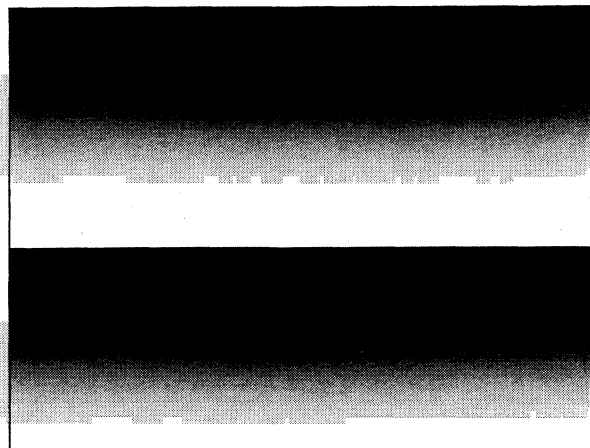
3-1-2. Concentration Adjustment during Thermal Head Replacement

1 Output test pattern STEP(H) referring to "Outputting the Test Pattern (Inte rnal Signal)".

2. Press the PRINT key and print STEP(H) before thermal head replacement. Use the print result as the reference of concentration.

3. Replace the thermal head.

4. After replacement, print STEP(H) again and adjust the concentration.

5. Reset the number of head prints.

To increase the print concentration

4-1 Press the ↑ and ↓ keys and move the cursor to the "HEAD V:** SET EXEC " item in the service menu.

4-2 Press the ← and → keys and increase the numerical value (20 to 7F) displayed in hexadecimal (the head supply voltage then increases). To decrease the print concentration, decrease the numerical value (the head supply voltage then decreases).

4-3 Press the EXEC key to determine the voltage. (The head supply voltage changes by performing this operation.)

4-4 Press the PRINT key to print STEP(H). Adjust HEAD V repeatedly until the print result and the reference printed before head replacement become the same in concentration.

To reset the number of head prints

5-1 Press the ↑ and ↓ keys and move the cursor to the "HEAD PRN.: ***** " item in the service menu.

5-2 Press the CLEAR and EXEC keys simultaneously.

5-3 "PiPiPi PiPiPi" sounds and the number of accumulated HEAD PRN sheets becomes "00000".

Note:

The memory image may be cleared in timing when the CLEAR and EXEC keys are pressed simultaneously.

3-1-3. Electrical adjustment(analog section)

(1) Equipment Required

    a. Composite signal

       FULL FIELD 75% COLOR BAR (WHITE REF 100IRE)

    b. S-VIDEO signal

       FULL FIELD 75% COLOR BAR (WHITE REF 100IRE)

       ANTI PAL

    c. RGB signal

       STEP (WHITE REF 100IRE)

    Note: Sub carrier frequency of color bar signal

          : 3.579545MHz ± 40Hz

How to enter the service mode(Test signal output method)

While pushing $\boxed{\rightarrow}$ and $\boxed{\leftarrow}$ keys , turn the power switch to ON. The unit becomes service mode.

```
SERVICE MENU1 Ver.1.00a
 / SVC1 / SVC2 /
▶PATTERN     : STEP VA
 HEAD V      : 3A SET [EXEC]
 LANGUAGE    : E / G / F / J
 LCD CHECK   : PRESS [EXEC]
 VA ADJUST   : PRESS [EXEC]
 H BLANKING  :   00  DOT (S)
 V BLANKING  :   00  DOT (S)
 HEAD PRN.   : 04353
 TOTAL PRN.  : 04375
```

Move the cursor ▶ to the position of PATTERN and select the test signal by $\boxed{\rightarrow}$ and $\boxed{\leftarrow}$, push the $\boxed{\text{EXEC}}$ key and STEP VA pattern is appeared on the monitor.

When adjusting analog adjustment, turn $\boxed{\text{MENU}}$ image OFF.

Move the cursor ▶ to the position of VA ADJUST and push the $\boxed{\text{EXEC}}$ key, the unit becomes the VA ADJUST mode. In this mode, the signal on the monitor is not displayed. Push the $\boxed{\text{EXEC}}$ key again, the VA ADJUST mode is released.

1. INT 4 Fsc Adjustment (NTSC)

Machine condition for adjustment	Specifications	Adjustments
1. SOURCE/MEMORY : MEMORY	TP703(A-5) TP302(F-6) : GND 14.31818MHz ± 80Hz	⊘CV703(A-5)

2. EXT 4 Fsc Adjustment (NTSC)

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT : Y/C SIGNAL : NONE	IC608(P-5) 17P TP602(P-4) : GND 14.31818MHz ± 80Hz	⊘CV601(P-6)

3. INT 4 Fsc Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments
1. SOURCE/MEMORY : MEMORY	TP702(A-6) TP302(F-6) : GND 17.734475MHz ± 80Hz	⊘CV701(B-6)
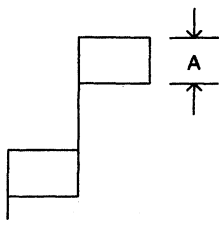
4. INT VCXO Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments
1. SOURCE/MEMORY : MEMORY	TP701(B-6) TP302(F-6) : GND DC 2.0 ± 0.2V	⊘CV702(B-5)
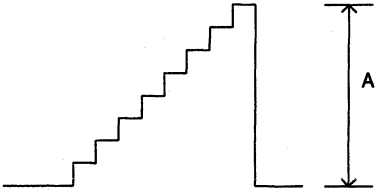
5. EXT 4 Fsc Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT : Y/C SIGNAL : NONE	IC608(P-5)17P TP602(P-4) : GND 17.734475MHz ± 80Hz	⊘CV602(P-4)
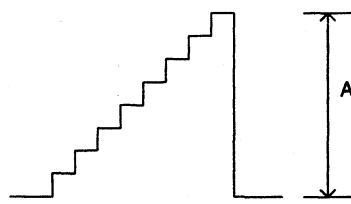
6. CARRIER BAL Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. PATTERN : STEP VA 2. SOURCE/MEMORY : MEMORY	TP907(B-2) TP909(D-2) : GND A= minimum	⊘RV801(B-3) ⊘RV803(A-3) TRIG TP604(K-1)
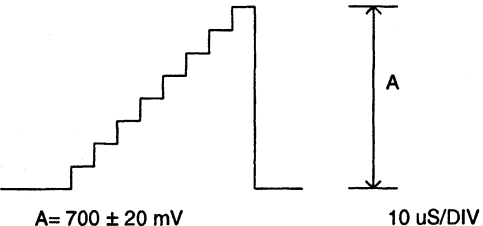
7. R MONI Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. PATTERN : STEP VA 2. SOURCE/MEMORY : MEMORY	TP901(E-2) TP909(D-2) : GND A= 700 ± 20 mV 10 uS/DIV	⊘RV902(C-4) TRIG TP604(K-1)
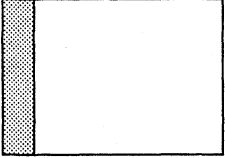
8. G MONI Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. PATTERN : STEP VA 2. SOURCE/MEMORY : MEMORY	TP902(D-2) TP909(D-2) : GND A= 700 ± 20 mV 10 uS/DIV	⊘RV901(D-3) TRIG TP604(K-1)
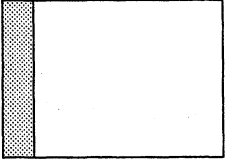
9. B MONI Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. PATTERN:STEP VA 2. SOURCE/MEMORY : MEMORY	TP903(D-2) TP909(D-2) : GND A= 700 ± 20 mV 10 uS/DIV	✐RV903(D-4) TRIG TP604(K-1)
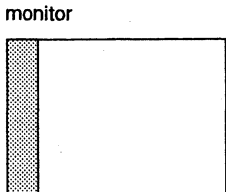
10. R IN Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT : RGB 3. AGC : OFF	monitor Shaded portion of red becomes maximum.	✐RV101(H-2)

11. G IN Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT : RGB 3. AGC : OFF	monitor Shaded portion of yellow becomes maximum.	✐RV102(H-2)
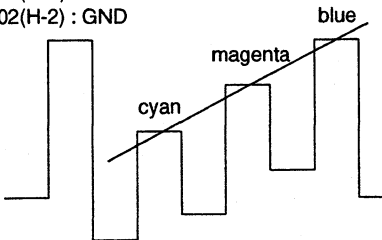
12. B IN Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT:RGB SIGNAL : STEP 3. AGC:OFF	monitor Shaded portion of white becomes maximum.	⊘RV103(J-3)
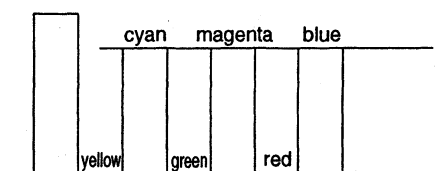
13. DECODER F0 Adjustment (NTSC)

Machine condition for adjustment	Specifications	Adjustments

1. INPUT SELECT : Y/C
   SIGNAL : COLOR BAR
2. Set the pin 4 of IC301 to 9V by
   RV301(H-5).
 	
Note : If there is not RV301, short-
circuit between pins 4 and 47
of IC301.
	TP409(G-4)
	TP601(M-5) : GND
	Adjust so that it becomes demodulated waveform.
	Demodulated waveform.... There is not sub carrier of
	3.58MHZ and demodulated
	output is not fluctuated the level.
	
	After this adjustment, set the pin 4 of IC301 to 4.5V by
	RV301. If there is not RV301, remove short-circuited wire
	between pins 4 and 47 of IC301.
		⊘CV302(K-6)
		
		TRIG
		TP604(K-1)

14. HUE Adjustment (NTSC)

Machine condition for adjustment	Specifications	Adjustments

1. INPUT SELECT : Y/C
   SIGNAL : COLOR BAR
2. SOURCE/MEMORY : SOURCE
3. AGC : OFF
	TP404(G-2)
	TP402(H-2) : GND blue
	     magenta
	   cyan
	
	Adjust RV307 so that cyan, magenta and blue are
	on the one straight line.
		⊘RV307(L-4)
		
		TRIG
		TP604(K-1)
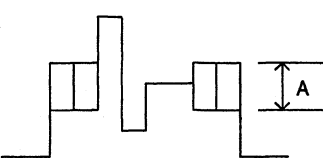
15. COLOR Adjustment (NTSC)

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT : Y/C SIGNAL : COLOR BAR 2. SOURCE/MEMORY : SOURCE 3. AGC : OFF	TP404(G-2) TP402(H-2) : GND cyan magenta blue yellow green red Adjust RV306 so that cyan, magenta, blue and yellow, green, red become respectively horizontal and are on the straight one line.	❷RV306(L-5) TRIG TP604(K-1)

16. DECODER F0 Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments

1. INPUT SELECT : Y/C
  SIGNAL : COLOR BAR
2. Set the pin 4 of IC301 to 9V by RV301(H-5).
	TP409(G-4)
	TP601(H-5) : GND
	Adjust so that it becomes demodulated waveform.
	Demodulated waveform.... There is not sub carrier of
	                4.43MHZ and demodulated
	                output is not fluctuated the level.
	
	After this adjustment, set the pin 4 of IC301 to 4.5V by RV301.
		❷CV301(H-6)
		
		TRIG
		TP604(K-1)
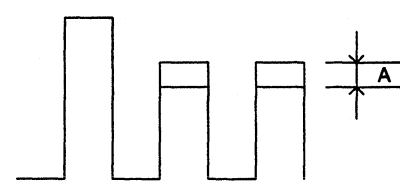
17. DLA Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT : Y/C SIGNAL : ANTI PAL 2. SOURCE/MEMORY : SOURCE	TP404(G-2) TP402(H-2) : GND A A= minimum	❷RV302(H-6) TRIG TP604(K-1)
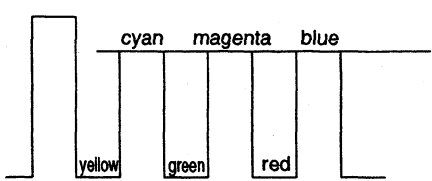
18. PHASE Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT : Y/C SIGNAL : ANTI PAL 2. SOURCE/MEMORY : SOURCE	TP404(G-2) TP402(H-2) : GND A= minimum	✐RV301(H-5) TRIG TP604(K-1)
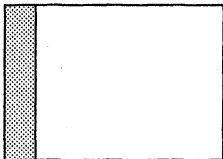
19. DAT Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT : Y/C SIGNAL : COLOR BAR 2. SOURCE/MEMORY : SOURCE	TP404(G-2) TP402(H-1) A= minimum	✐LV301(H-6) TRIG TP604(K-1)
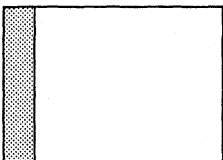
20. COLOR Adjustment (PAL)

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT SIGNAL : COLOR BAR 2. SOURCE/MEMORY : SOURCE 3. AGC : OFF	TP404(G-2) TP402(H-2) : GND Adjust RV306 so that cyan, magenta, blue and yellow, green, red become respectively horizontal and are on the straight one line.	✐RV306(L-5) TRIG TP604(K-1)
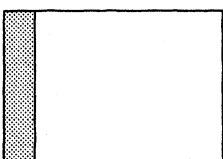
21. PIC Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT : Y/C SIGNAL : COLOR BAR 3. SOURCE/MEMORY : SOURCE 4. AGC : OFF	monitor Shaded portion of green becomes maximum.	⊘RV303(J-4)
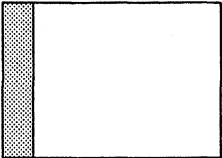
22. DEC R Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT : Y/C SIGNAL : COLOR BAR 3. SOURCE/MEMORY : SOURCE 4. AGC : OFF	monitor Shaded portion of yellow becomes maximum.	⊘RV304(J-4)
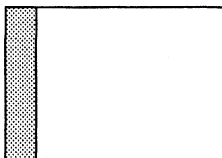
23. DEC B Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT : Y/C SIGNAL : COLOR BAR 3. SOURCE/MEMORY : SOURCE 4. AGC : OFF	monitor Shaded portion of white becomes maximum.	⊘RV305(J-4)
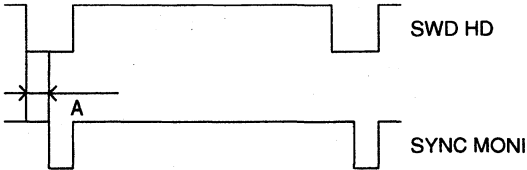
24. AGC REF Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT : Y/C 　　SIGNAL : COLOR BAR 3. SOURCE/MEMORY : SOURCE 4. AGC : ON	monitor Shaded portion of white becomes maximum.	⊘RV401(M-3)

25. VBS Y Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. VA ADJUST MODE 2. INPUT SELECT : VBS 　　SIGNAL : COLOR BAR 3. SOURCE/MEMORY : SOURCE 4. AGC : OFF	monitor Shaded portion of white becomes maximum.	⊘RV201(P-4)

26. H PHASE Adjustment

Machine condition for adjustment	Specifications	Adjustments
1. INPUT SELECT : Y/C 　　SIGNAL : COLOR BAR 2. SOURCE/MEMORY : SOURCE 3. AGC : OFF Note : NTSC and PAL compatible 　　　model is satisfied the NTSC 　　　spec.	TP604(K-4) : SWD HD TP904(C-2) : SYNC MONI SWD HD A SYNC MONI A; 0 ± 100 ns (NTSC) A; 250 ns ± 100 ns (PAL)	⊘RV601(L-6) TRG TP604(K-1)

3-2. MECHANICAL ADJUSTMENT

3-2-1. Mechanical Adjustment Mode

- This mode is used to adjust the electric boards (PRT-11, SE-417 to SE-430, and SU-36 to SU-39 boards) mounted on the mechanical deck and confirm the assembling of mechanical parts.
- Perform the mechanical adjustment when the electric boards mounted on the mechanical deck or the mechanical deck parts were replaced. (Especially, various information items on the mechanical deck are stored in IC1 on the SE-417 board. Be sure to perform the whole mechanical adjustment after IC1 on the SE-417 board is replaced.)

3-2-2. Entering the Mechanical Adjustment Mode

(1) Turn on the power while pressing the $\boxed{\text{DISPLAY OFF}}$ and $\boxed{\text{EXEC}}$ keys simultaneously.

(2) The "MECHA_SETUP" menu in the mechanical adjustment mode is displayed on the screen (or LCD).

MECHA SET UP MENU

```
MECHA SETUP  PRESS[EXEC]
▷SENSORS CHECK
  THERM&EEPROM CHECK
  HEAD HOME CHECK
  TRAY-ARM HOME CHECK
  PLATEN HOME CHECK
  FG SENSOR CHECK
  BARCODE ADJUSTMENT
  RBN_CD_ADJUSTMENT
  PRINT ADJUSTMENT
  SENSORS DATA 00
```

OK

```
MECHA SETUP  PRESS[EXEC]
  SENSORS CHECK
  THERM&EEPROM CHECK
▷HEAD HOME CHECK
  TRAY-ARM HOME CHECK
  PLATEN HOME CHECK
  FG SENSOR CHECK
  BARCODE ADJUSTMENT
  RBN_CD_ADJUSTMENT
  PRINT ADJUSTMENT
  SENSORS DATA 00
OK
```

NG

```
MECHA SETUP  PRESS[EXEC]
▷SENSORS CHECK
  THERM&EEPROM CHECK
  HEAD HOME CHECK
  TRAY-ARM HOME CHECK
  PLATEN HOME CHECK
  FG SENSOR CHECK
  BARCODE ADJUSTMENT
  RBN_CD_ADJUSTMENT
  PRINT ADJUSTMENT
  SENSORS DATA 00
E2 0E
```

SENSOR DATA

```
MECHA SETUP  PRESS[EXEC]
  SENSORS CHECK
  THERM&EEPROM CHECK
  HEAD HOME CHECK
  TRAY-ARM HOME CHECK
  PLATEN HOME CHECK
  FG SENSOR CHECK
  BARCODE ADJUSTMENT
  RBN_CD_ADJUSTMENT
  PRINT ADJUSTMENT
▷SENSORS DATA 00
FE F4 1C 80
```

(3) Move the cursor to the item to be adjusted or confirmed using $\boxed{\uparrow}$ and $\boxed{\downarrow}$ keys and press the $\boxed{\text{EXEC}}$ key.

(4) The adjustment and confirmation are automatically performed by the mechanical deck. After adjustment and confirmation are completed, the result is displayed on the screen (or LCD).

(5) If abnormality is confirmed, take proper actions referring to the NG_CODE list (on page 6-6 to 6-8).

(6) Turn on the power again when exiting the mechanical adjustment mode.

3-2-3. Normal Operation Confirmation and Automatic Adjustment

1. SENSORS_CHECK

[Contents] • Check that the communication between boards is possible.
  • Check that the sensor in the item to be checked operates normally.
  • Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Open the platen cover and pull out the ribbon cartridge and paper tray.
  2) Move the cursor to the item and press the ⌷EXEC⌷ key.

[Display] • OK : OK
  • NG : If no answer*no answer is displayed, the subsequent adjustment and confirmation cannot be performed because the communication with the SY-250 board is impossible.
  : NG command (E2) and NG data (**)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG_CODE2.)

2. THERM&EEPROM_CHECK

[Contents] • Check that IC1 on the SE-417 board operates normally.
  • Check that the thermal head thermistor and the thermistor (TH1) on the PRT-11 board operate normally.
  • Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Move the cursor to the item and press the ⌷EXEC⌷ key.

[Display] • OK : OK
  • NG : NG command (E4) and NG data (**)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG_CODE3.)

3. HEAD_HOME_CHECK

[Contents] • Check that the head position sensor operates normally.
  • Check that the head motor operates.
  • Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Open the platen cover and pull out the ribbon cartridge and paper tray.
  2) Move the cursor to the item and press the ⌷EXEC⌷ key.

[Display] • OK : OK
  • NG : NG command (E1) and NG data (**)(One-byte data is displayed by a HEX code. The value of the HEX code is an NG item. Refer to NG_CODE1.)

4. TRAY_ARM_HOME_CHECK

[Contents] • Check that the tray position sensor operates normally.

• Check that the tray motor operates.

• Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Open the platen cover and pull out the ribbon cartridge and paper tray.

2) Move the cursor to the item and press the EXEC key.

[Display] • OK : OK

• NG : NG command (E1) and NG data (**)(One-byte data is displayed by a HEX code. The value of the HEX code is an NG item. Refer to NG_CODE1.)

5. PLATEN_HOME_CHECK

[Contents] • Check that the platen position sensor operates normally.

• Check that the platen motor operates.

• Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Open the platen cover and pull out the ribbon cartridge and paper tray.

2) Move the cursor to the item and press the EXEC key.

[Display] • OK : OK

• NG : NG command (E1) and NG data (**)(One-byte data is displayed by a HEX code. The value of the HEX code is an NG item. Refer to NG_CODE1.)

6. FG_SENSOR_CHECK

[Contents] • Check that the paper supply FG sensor and ribbon FG sensor operate normally.

• Check that the paper supply motor and ribbon motor operate.

• Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Open the platen cover and pull out the ribbon cartridge and paper tray.

2) Move the cursor to the item and press the EXEC key.

[Display] • OK : OK

• NG : NG command (E5) and NG data (**)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG_CODE4.)

7. BARCODE_ADJUSTMENT

[Contents] • The light-emitting level and threshold level of a barcode sensor are adjusted automatically.
 • Check that the paper supply motor operates.
 • Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Close the platen cover and insert the ribbon cartridge.
 2) Move the cursor to the item and press the EXEC key.

[Display] • OK : OK
 • NG : NG command (E5) and NG data (**)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG_CODE4.)

8. RBN_CD_ADJUSTMENT

[Contents] • The light-emitting level and threshold level of RBN_CD0 and RBN_CD1 sensors are adjusted automatically.
 • Check that the ribbon motor operates.
 • Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Close the platen cover and insert the ribbon cartridge.
 2) Move the cursor to the item and press the EXEC key.

[Display] • OK : OK
 • NG : NG command (E5) and NG data (**)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG_CODE4.)

9. PRINT_ADJUSTMENT

[Contents] • The light-emitting level and threshold level of a PP_JAM sensor are adjusted automatically.
 • Check that no irregular print is caused by the thermal head or gear.
 • Check that no abnormality exists in the path system of paper.
 • Check that the harnesses and mechanical parts are assembled properly.

[Procedure] 1) Close the platen cover and insert the ribbon cartridge and paper tray.
 2) Move the cursor to the item and press the EXEC key.

[Display] • OK : OK
 • NG : NG command and NG data (h' **)(One-byte data is displayed by a HEX code.
 The value of the HEX code is an NG item. Refer to NG_CODE4.)

10. SENSORS_DATA

[Contents] • Display the adjustment values (light-emitting level value, high-level value, low-level value, and threshold value) of four sensors that were adjusted automatically. (RBN_CD0, RBN_CD1, BARCODE, and PP_JAM sensors)

• Trouble history information of mechanical deck (Read the error information occurring during mechanical operation. Up to the last eight error information can be stored. The contents of data correspond to the NG_CODE1 data.

[Procedure] 1) Move the cursor to the item using $\leftarrow$ and $\rightarrow$ keys to select the desired item and press the EXEC key.

For display number "00": RBN_CD0 sensor
For display number "01": RBN_CD1 sensor
For display number "02": BARCODE sensor
For display number "03": PP_JAM sensor
For display number "04": Trouble history information

[Display] (Example) 84 f5 0f 80

(One-byte data is displayed using a HEX code. In each sensor, data is arranged in the order of "light-emitting level value", "high-level value", "low-level value", and "threshold value" from the top. For the data described above, the LED voltage value is 84, and the high value of PHTR is f5. The low value of PHTR is 0f, and the threshold value is 80.)

[How to convert the data displayed using a HEX code into a sensor voltage value]

• The displayed data indicates the value obtained when the voltage levels (0 to 5V, and 0 V) of each sensor are equally divided into 1/256. Therefore, the voltage value that the HEX code indicates can be obtained from the calculation below.

(Example) When the HEX code is h 'b3 h 'b3 = d' 179 ($\leftarrow$ Converts the hexadecimal display into a decimal display.)

5.0(V) x 179 / 256 = 3.4(V)($\leftarrow$ Voltage value of sensor indicated by h 'b3)

SECTION 4
CIRCUIT DESCRIPTION

4-1. DIGITAL VIDEO SIGNAL PROCESSING BLOCK

4-1-1. Outline

The major functions of the FMY-21 board are as follows:

① Converts a video input signal from analog to digital and stores it in memory (DRAM). (Capture)

② Color-adjusts the video data stored in memory using a color adjustment circuit, then converts it from digital to analog, and outputs it to the analog block as a monitor output signal. (Monitor output)

③ Color-adjusts the video data stored in memory using a color adjustment circuit, then outputs it to the head control block through a masking block as print data. (Print data output)

④ Converts a video input signal from analog to digital, then from digital to analog and outputs it to the analog block as a monitor output signal. (Source output)

The FMY-21 board consist of the following blocks.
CPU block
Memory (DRAM) block
Memory control (ASIC) block
Sampling clock generator
Color adjustment block
Masking block

【Block Diagram】
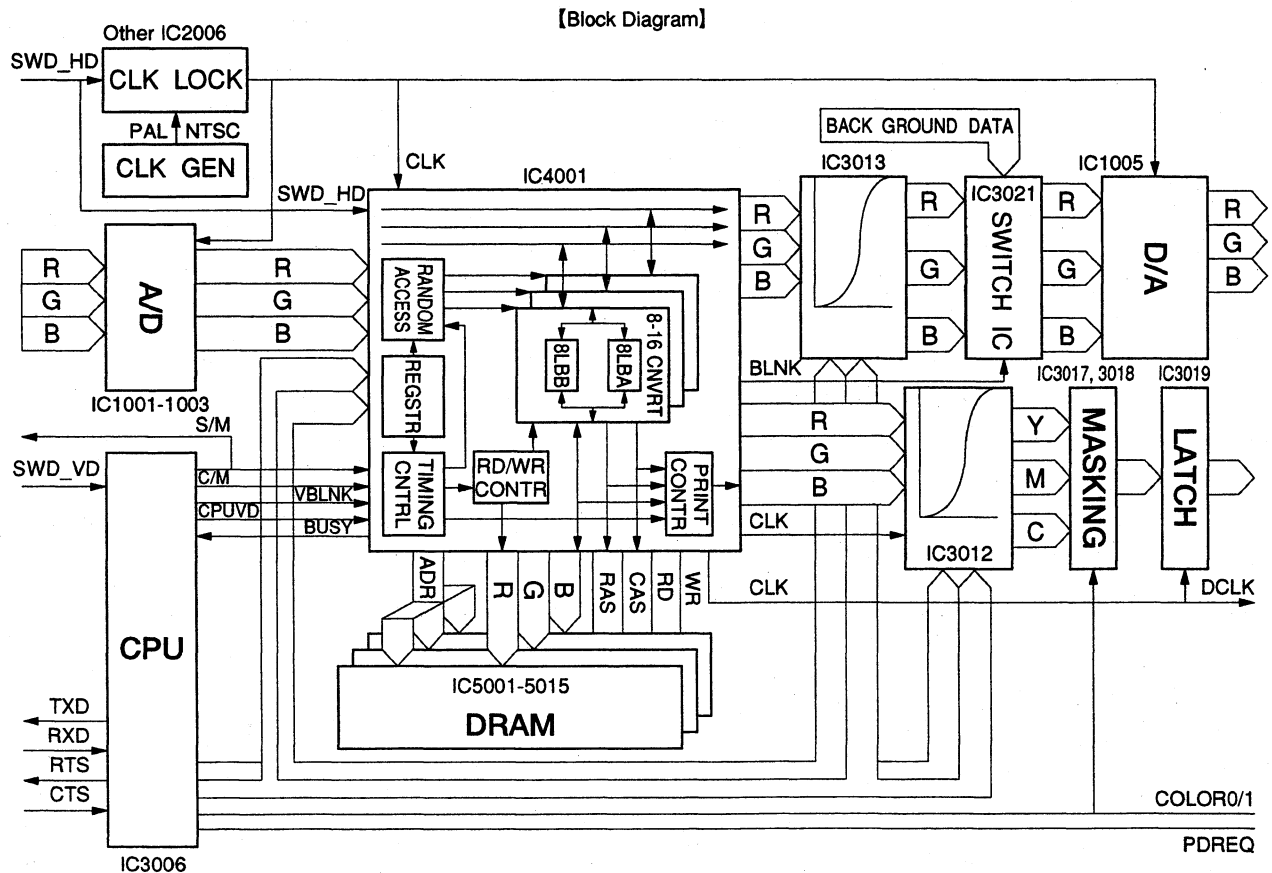
4-1-2. Flow of Video Signal in Each Operation Mode

The operation mode on the flow of a video signal on the FMY-21 board can be classified into the following four modes.
(1) Source mode
(2) Memory mode
(3) Capture mode
(4) Print data transfer mode

① Source mode

In the source mode, a video input signal is directly output through the FMY-21 board to the monitor. The flow of a video signal is described below. The analog RGB signal input from the VA-181 board is converted from analog to digital to produce each eight-bit digital signal. The signal is passed through a DRAM control circuit (IC4001) and color-adjusted using a color adjustment circuit (IC3013). After that, the image size is adjusted by the blanking circuit consisting of CPU and a DRAM control circuit. The signal is then converted from digital to analog to produce an analog signal again and output to the VA-181 board.

[Source mode]
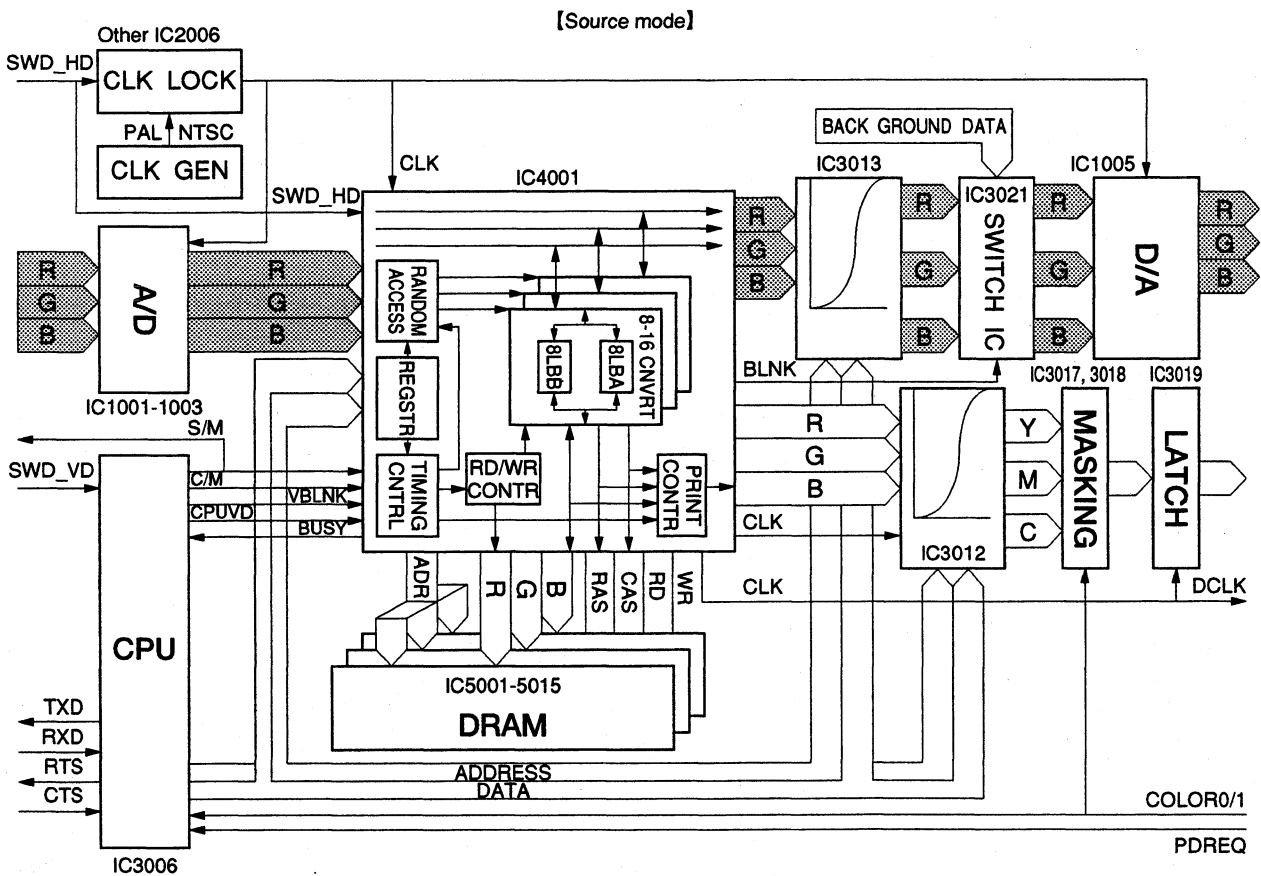
② Memory mode

In the memory mode, the video data fetched on DRAM is output to the monitor. The flow of a video signal is described below. The digital video data fetched on DRAM is read using DRAM control circuit CXD8665Q (IC4001) and converted from 16 bits to 8 bits. After that, the data is color-adjusted using a color adjustment circuit (IC3013), and the image size is adjusted by the blanking circuit consisting of a DRAM control circuit. The data is then converted from digital to analog and output to the VA-181 board.

[Memory mode]
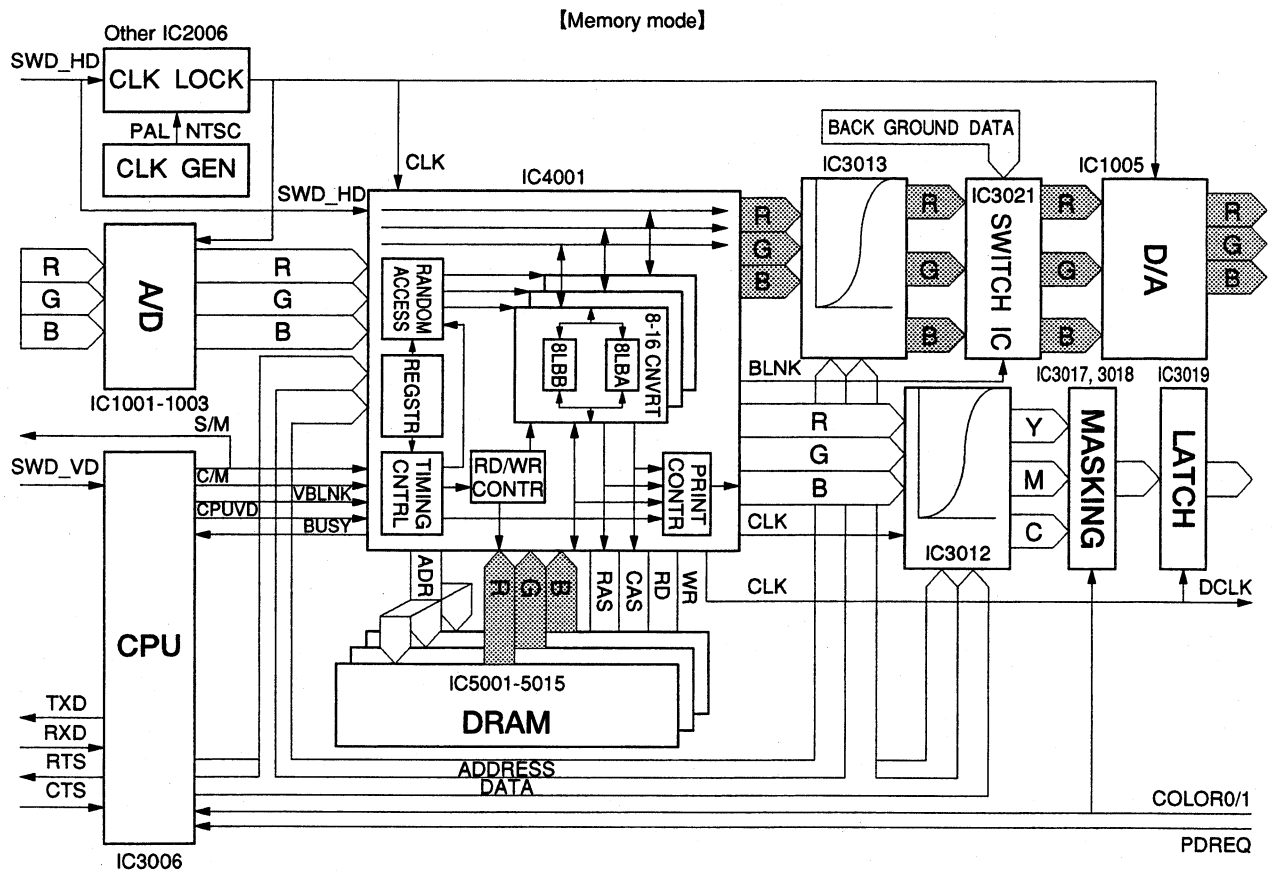
③ Capture mode

In the capture mode, a video input signal is converted from analog to digital and fetched into DRAM. The flow of a video signal is described below. The video signal input from the VA-181 board is converted from analog to digital to produce an eight-bit digital signal. In DRAM control circuit CXD8665Q (IC4001), the signal is then converted from eight bits to 16 bits, divided into 1/4 or 1/16 (decimation), and expanded in DRAM.

【Capture mode】
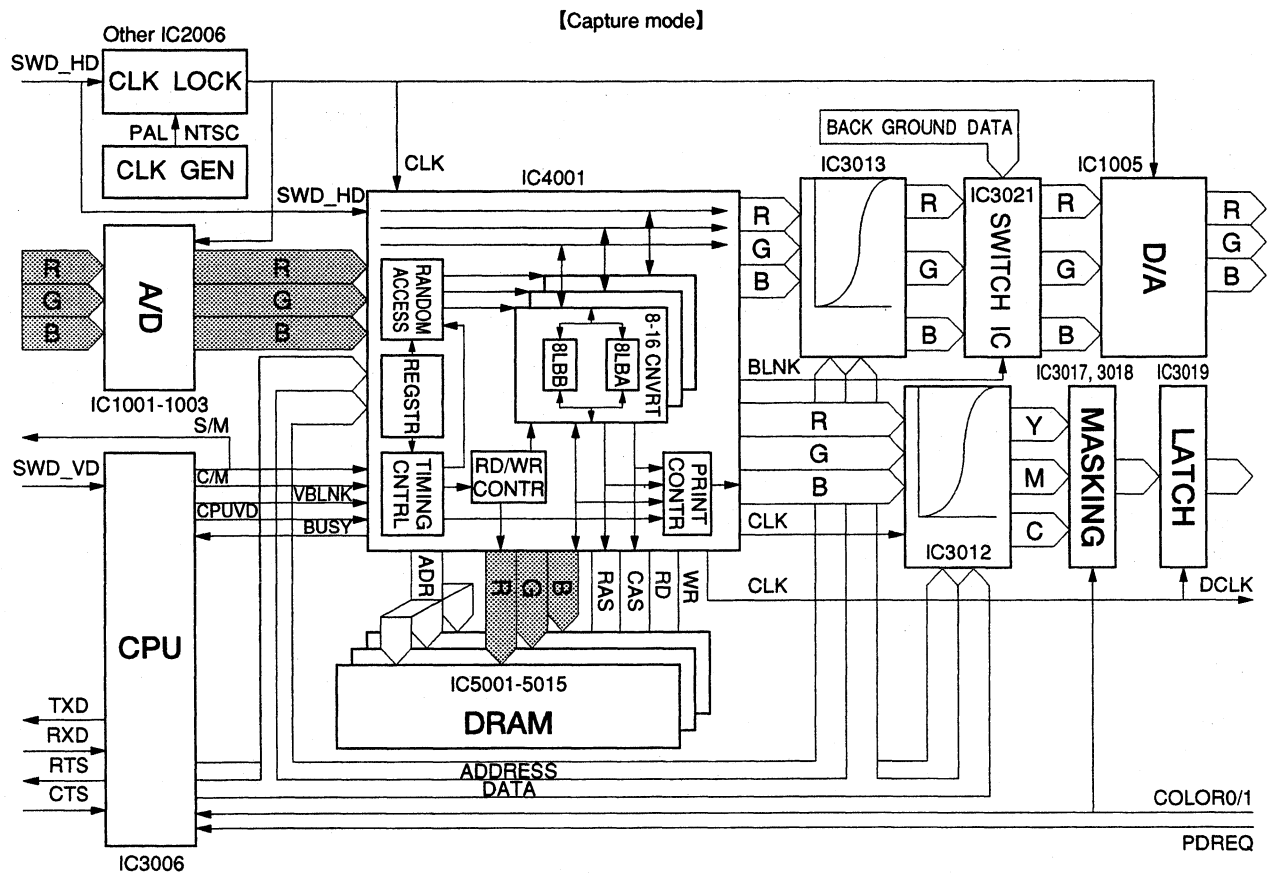
④ Print data transfer mode

In the print data transfer mode, the video data in DRAM is output to the PRT-1 1 board as print data during print. The flow of a video signal is described below.

The data request signal from the PRT-11 board is input to CPU (IC3006). CPU controls DRAM control circuit CXD8665Q (IC4001), and the DRAM control circuit converts the video data in DRAM into print data and outputs it. After that, the data is color-adjusted, color-rotated, and RGB/YMC-converted by a color adjustment circuit (IC3012). The data is then mask-converted using two masking ROMs and output to the PRT-11 board as print data.

【Print mode】
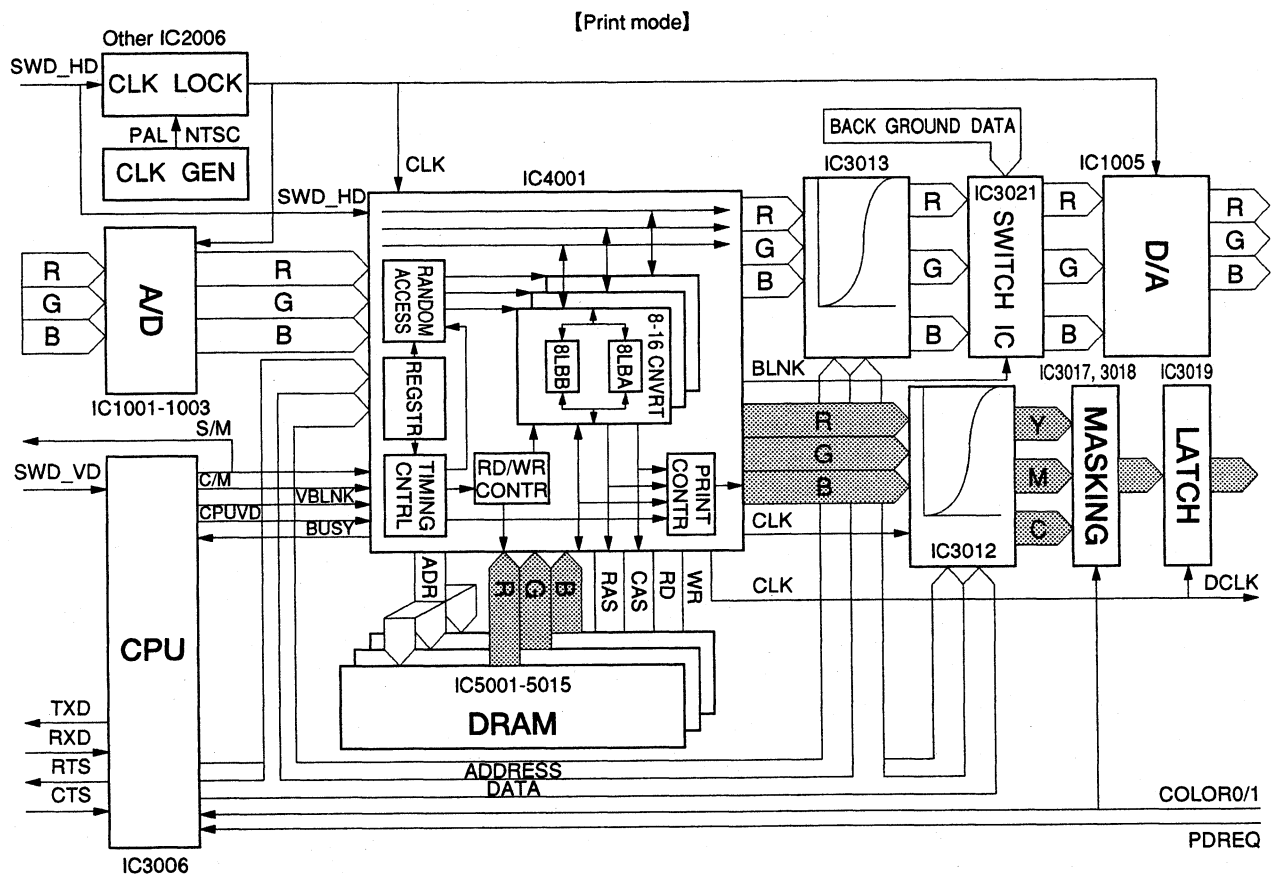
4-1-3. Basic Operation Timing and CPU

The operation of the FMY-21 board is controlled and managed according to the command from the SY-250 board by CPU. CPU operates with the VD signal (nSWD_VD) selected to EXT/INT as reference and sets and controls a DRAM control circuit.

The major functions of CPU that mainly controls the FMY-21 board operation are as follows:

(1) Receives the command from the SY-250 board and executes it.

(2) VF judgment of video input signal (Synchronous management)

(3) Outputs a VBLNKING signal.

(4) Controls a DRAM control circuit.

(5) Writes a color adjustment data.

(6) Writes caption data.

(7) STROBE-compatible

① CPU memory map

The memory map of CPU is shown below.

00000	Program ROM
20000	
C0000	Color adjustment circuit (Monitor)
C1000	Color adjustment circuit (Print)
C2000	DRAM control register
C3000	
FF710	Internal SRAM of CPU
FFF10	
FFF1C	Internal register of CPU
FFFFF	

② Flowchart of CPU

```
                    ┌──────────────┐
                    │    Start     │
                    └──────┬───────┘
                    ┌──────┴───────┐
                    │  Initialize  │
MAIN:               └──────┬───────┘
                           │        ── nSWD_VD
                           │◄─────/
                           │         IRQ0  ┌────────────────────────┐
                           │◄────────────► │ VF judgment and counter│
                           │               │ setting for nCPU_VD    │
                           │               │ creation               │
                           │               └────────────────────────┘
                           │        ── nSWD_HD
                           │◄─────/
                           │         IRQ1  ┌────────────────────────┐
                           │◄────────────► │ VF judgment and        │
                           │               │ nVBLANK generation     │
                           │               └────────────────────────┘
                           │        ── nPRINT_DREQ
                           │◄─────/
                           │         IRQ2  ┌────────────────────────┐
                           │◄────────────► │ Print data output      │
                           │               │ setting                │
                           │               └────────────────────────┘
                           │        ── nIMCAP
                           │◄─────/
                           │         IRQ4  ┌────────────────────────┐
                           │◄────────────► │ Execution of maximum-  │
                           │               │ speed image fetch      │
                           │               │ function               │
                           │               └────────────────────────┘
                           │        ── SCI
                           │◄─────/
                           │         RXI   ┌────────────────────────┐
                           │◄────────────► │ Command storage and    │
                           │               │ command flag setting   │
                           │               └────────────────────────┘
                      ◄────┴────►                ┌────────────────────────┐
                    <  DMA flags  >──────────────│ DRAM controller setting│
                      ◄────┬────►                └────────────────────────┘
                           │◄───────────────────────────────┘
                      ◄────┴────►        ◄────────►  VBLANK  ┌──────────────────────┐
                    < Color ADJ  >──────< VBLANK  >──────────│ Color adjustment data │
                      ◄──flag───►         ◄──────►           │ write                 │
                           │◄──────────────────────────────────────────┘
                      ◄────┴────►        ◄────────►  VBLANK  ┌──────────────────────┐
                    < Caption flag>──────< VBLANK  >──────────│ Caption data write   │
                      ◄─────────►         ◄──────►           └──────────────────────┘
                           │◄──────────────────────────────────────────┘
                      ◄────┴────►                ┌────────────────────────┐
                    < Command flag>──────────────│ Command execution      │
                      ◄─────────►                └────────────────────────┘
                           │◄───────────────────────────────┘
```

③ Time-division timing

Area in step (3)

(1) VBLNK period

VF judgment, color adjustment data write, and caption data write (Controlled by CPU.)

(2) HBLNK period

Print data output (2)(Controlled by a DRAM control circuit.)

(3) Effective screen period

A) DRAM refresh (Controlled by a DRAM control circuit)

B) Capture or monitor output DRAM access (Controlled by a DRAM control circuit.)

C) Print data output (1)(Controlled by a DRAM control circuit.)

④ Command communication with SY board

This communication is carried out by bidirectional asynchronous serial communication that uses a serial communication port of CPU.

Asynchronous serial communication

Start bit : 1

Data bit : 8

Stop bit : 1

Parity bit : None

Baud rate : 19,200 bps

⑤ Synchronous management

The external sync signals (nEXT_VD and nEXT_HD) and internal sync signals (nINT_VD and nINT_HD) of a video input signal are input from the analog block. The internal and external sync signals are selected by the SRC/nMEMO signal from the CPU on the FMY-21 board and sent to the CPU and DRAM control circuit as a V sync signal (nSWD_VD) and H sync signal (nSWD_HD). The nEXT_HD signal is AFC-processed and input in the analog block. However, the FMY-21 board operation is not secured when the nEXT_HD signal is interrupted during input operation. The CPU to which nSWD_HD and nSWD_VD signals are input performs phase comparison and VF judgment (frame judgment). In this VF judgment, processing is done so that the context does not collapse even if jitters slightly exist in the sync signal. Therefore, the odd and even fields are not captured by mistake. The nSWD_VD signal is also AFC-processed by the software in CPU. Consequently, even if noise is mixed in the nSWD_VD signal, the noise component is canceled. A virtual VD signal (CPU_VD) is generated by CPU even if the nSWD_VD signal is interrupted or the period is changed. The CPU_VD signal is input to the DRAM control circuit.

⑥ VBLNKING signal output

An H blanking signal is generated in hardware by the data set in a DRAM control circuit. A V blanking signal is generated by CPU (CPUVBLNK), input to the DRAM control circuit, and output from the DRAM control circuit as a blanking signal for input video data capture and memory video data monitor output purposes. The CPUBVLNK signal that determines the position of the effective screen in the vertical (V) direction is generated by counting the falling edges of an nSWD_HD signal after an nSWD_VD signal is input to CPU.

⑦ Control of DRAM control circuit

Capture operation
Monitor output operation
Print data output
DRAM refresh operation
Random access operation

To execute the operation described above, each mode is set to the register of a DRAM control circuit.
The DRAM control circuit operates by triggering VD and HD signals. Each setting is not restricted in video timing. The setting value is latched by a VD signal and validated from the V interrupt.

CPU_VD

nSWD_HD

CPUVBLNK

Effective screen

Data setting
from CPU to IC

Validness after this VD signal

VBLNKING

V interrupt
★Vf judgment processing
★HD counter CLR
★CPUVD output processing

H interrupt
★HD counter CLR
★CPUVBLNK output
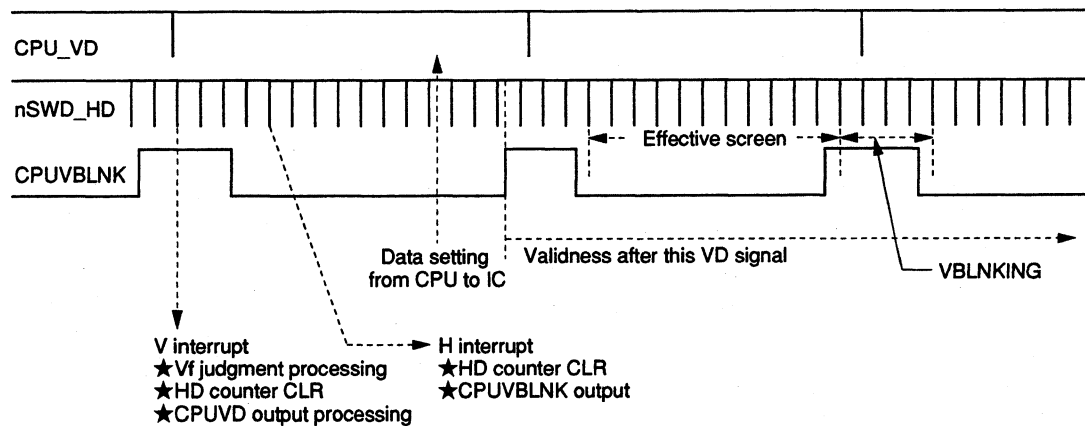
⑧ Color adjustment data write
Data for a conversion table is written in a color adjustment circuit (CXD8869Q) during V blanking.

⑨ Caption data write
Caption data is set in a DRAM control circuit during V blanking. The DRAM control circuit expands the data in DRAM.

⑩ IVP (identification photograph) STROBE-compatible
A strobe emission trigger signal is output from a printer. A trigger signal for strobe emission is output from CPU during V period just before capture when the capture operation is performed by the input signals from the REMOTE 1 and 2 terminals and main unit's key.

4-1-4. Memory (DRAM) block

The memory block of a one-frame unit is constituted by the following.

4 M-bit DRAM x 3 (NTSC 1 frame)

4 M-bit DRAM x 6 (PAL 1 frame)

For the memory block of a four-frame unit, nine 4 M-bit DRAMs are added to the configuration of a one-frame unit.

4 M-bit DRAM x 12 (NTSC 4 frames)

4 M-bit DRAM x 15 (PAL 4 frames)

The board has space enough to mount fifteen 4 M-bit DRAMs. The number of mounted DRAMs varies depending on the one-frame or four-frame unit. CPU obtains information such as the number of mounted DRAMs and NTSC/PAL application according to whether square-type chip conductors (0-ohm resistors) R5001 to R5006 are mounted or dismounted.

Model (Destination)	OP0 (LVL)	OP0 (LVL)	16M/4M (LVL)	Number of 4M DRAMs
UP-2800 (J/UC), 2900MD (J), 2300 (J/UC)	R5002 (L)	R5004 (L)	R5006 (L)	3
UP-2950MD (J)	R5001 (H)	R5004 (H)	R5006 (L)	12
UP-2800P (CE), 2900MD (UC), 2300P (CE)	R5002 (L)	R5003 (L)	R5006 (L)	6
UP-2850P (CE), 2950MD (UC)	R5001 (H)	R5003 (H)	R5006 (L)	15

Model (Destination)	DRAM reference
UP-2800 (J/UC), 2900MD (J), 2300 (J/UC)	IC5003, 5010, 5015
UP-2950MD (J)	IC5001, 5002, 5003, 5005, 5006, 5007, 5009, 5010, 5011, 5012, 5014, 5015
UP-2800P (CE), 2900MD (UC), 2300P (CE)	IC5002, 5003, 5007, 5010, 5011, 5015
UP-2850P (CE), 2950MD (UC)	IC5001, 5002, 5003, 5004, 5005, 5006, 5007, 5008, 5009, 5010, 5011, 5012, 5013, 5014, 5015

The memory space is constituted by 512(RAS) x 512(CAS) x 16 bits per color. It is virtually considered as 512(RAS) x 1024(CAS) x 8 bits during use when eight-bit video data is stored in the depth direction by two dots (two dots for one address). The video data is converted from 8 bits to 16 bits or 16 bits to 8 bits using a DRAM control circuit.

(CAS) 1024

CAPTION AREA

(RAS)
512 (STD)

FRAME1

STANDARD
CONFIGURATION

OPTION
FRAME2

(RAS)
2048 (+OPTION)

OPTION
FRAME3

OPTION
BOARD
ADDITION

OPTION
FRAME4

R
G
B

Memory Configuration (NTSC)

(CAS) 1024

CAPTION AREA

(RAS)
1024 (STD)

FRAME1

STANDARD
CONFIGURATION

FRAME2

(RAS)
2560 (+OPTION)

FRAME3

OPTION
BOARD
ADDITION

FRAME4

R
G
B

Memory Configuration (PAL)
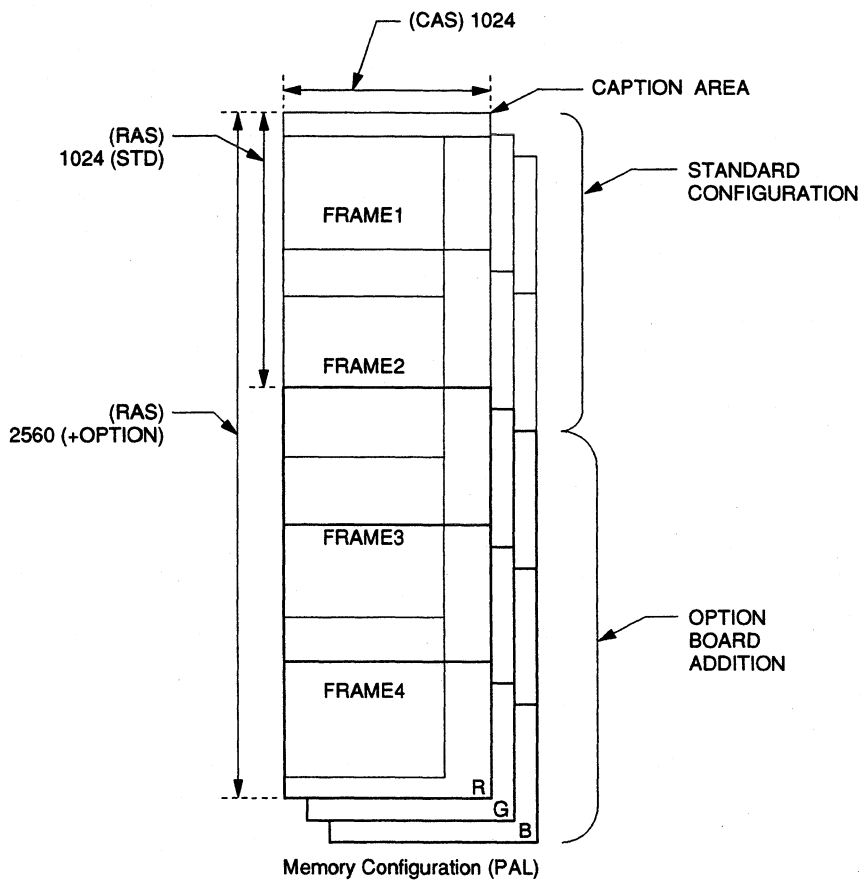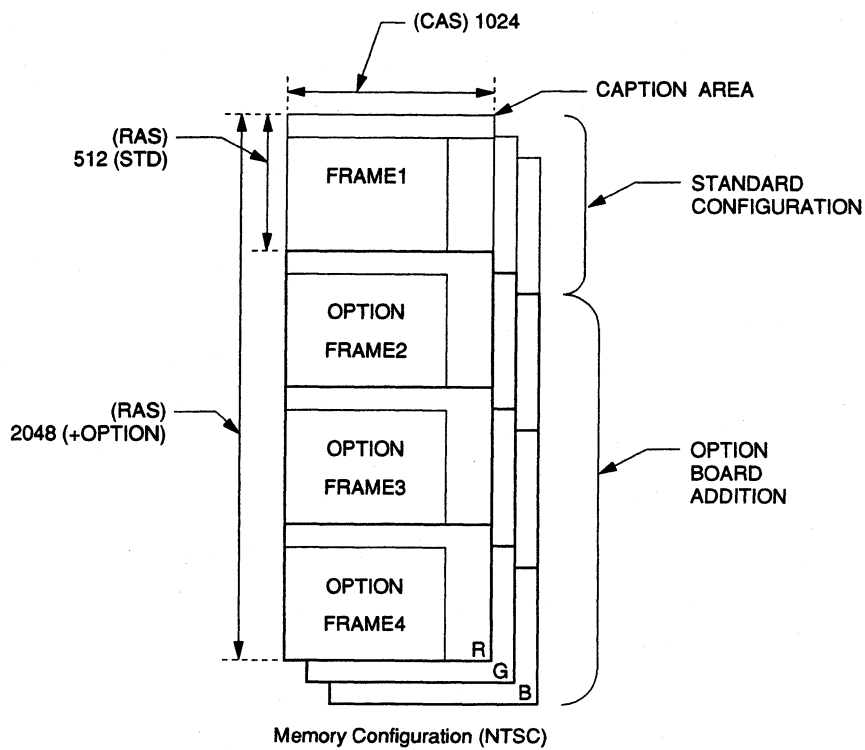
4-1-5. Memory Control Block

A two-dot pixel is stored in one address in the depth direction using 16-bit DRAM so as to double the virtual DRAM access rate. The processing is performed using a standard cell circuit. This circuit is controlled by CPU.

Conversion between 8 bits and 16 bits during input video data capture (FULL)(Reversed during monitor output.)

The number of addresses in LINEBUFFER is a half of input video data.
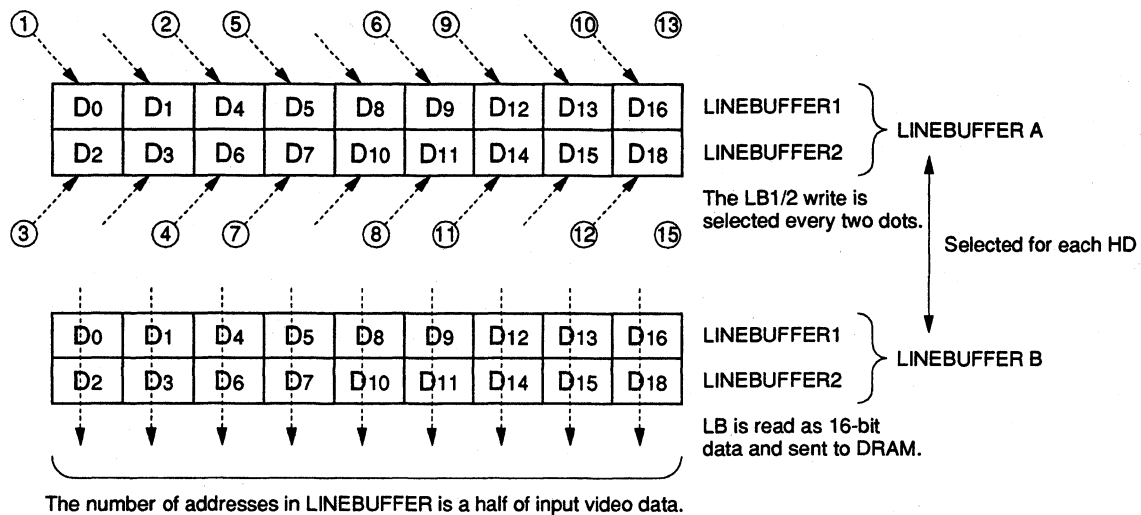
Main operation of DRAM control circuit and its setting
- Capture operation
  FULL image (SPLIT2H and 1VP or the equivalent)
  SPLIT2 image (Full field or the equivalent)
  SPLIT4 image (Sticker or the equivalent)
  SPLIT16 image Capture shift size
  Write DRAM address
  If the items above are set, the DRAM control circuit automatically performs the capture operation in synchronization with VD and HD signals.
- Print data output operation
  Output data count
  Read DRAM address
  If the items above are set, the print data output operation is performed by triggering from CPU.
- Monitor output operation
  FULL image (SPLIT2H, SPLIT4, SPLIT16, and IVP or the equivalent) SPLIT2 image (Decimated in the horizontal (H) direction.) STICKER (1/4-frame monitoring)

4in 1 image (The same as an SPLIT2 image in IC operation.)

Monitor output shift size

Read DRAM address

If the items above are set, the DRAM control circuit automatically performs the monitor output operation in synchronization with VD and HD signals.

- Random access operation

Write DRAM address

Write data

If the items above are set, the random access operation is performed by triggering from CPU during V blanking period.

- DRAM refresh operation

Number of refresh access addresses

If the item above is set, the DRAM control circuit automatically performs the DRAM refresh operation. (RAS-only refresh)

4-1-6. Color Adjustment Block

Video data is color-adjusted by IC3013 for video operation. For print operation, it is color-adjusted by an SRAM conversion table inside IC3012 (CXD8869Q).

The table data is contained in the ROM of a CPU program. The table data is rewritten during V blanking period for video operation. For print operation, it is rewritten immediately before print.

On the print side, the color rotation and RGB/YMC-conversion of print data are also performed in addition to color adjustment. The print color information is obtained from the PRT-11 board as a COLOR 0/1 signal.

Y PRINTING
COLOR0 = H
COLOR1 = L

M PRINTING
COLOR0 = L
COLOR1 = H

C PRINTING
COLOR0 = H
COLOR1 = H

BW PRINTING
COLOR0 = L
COLOR1 = L
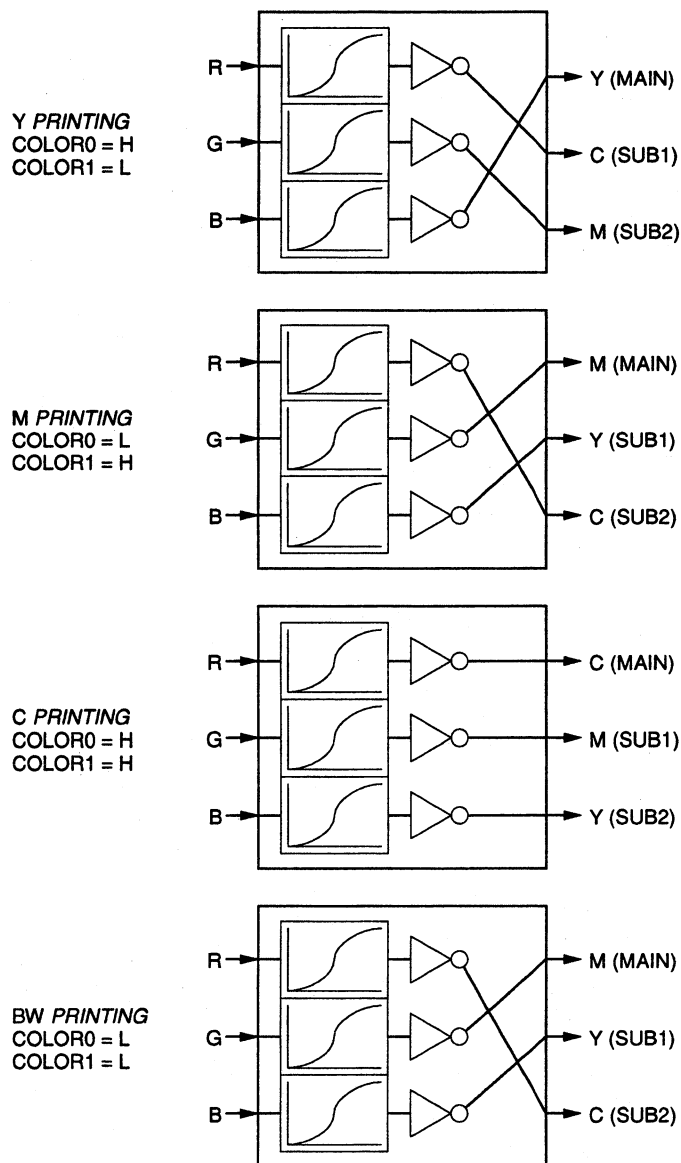
4-1-7. Sampling Clock Generator

The sampling clock generator generates a sampling clock and distributes it to the DRAM control circuit and color adjustment circuit by locking the phase to the "high" level of external and internal sync signals. The clock frequency is 15.75032 MHz for both NTSC and PAL systems. The timing chart of operation is as shown below.

Signal	
ORG_CLK	
nEXT_HD	
nl_HDIND	
l_CKO	
l_HDO	
l_CKOD	
nl_HDOD	
l_MASK	
l_SCK	
EXTCLK	
nEXTHDL	
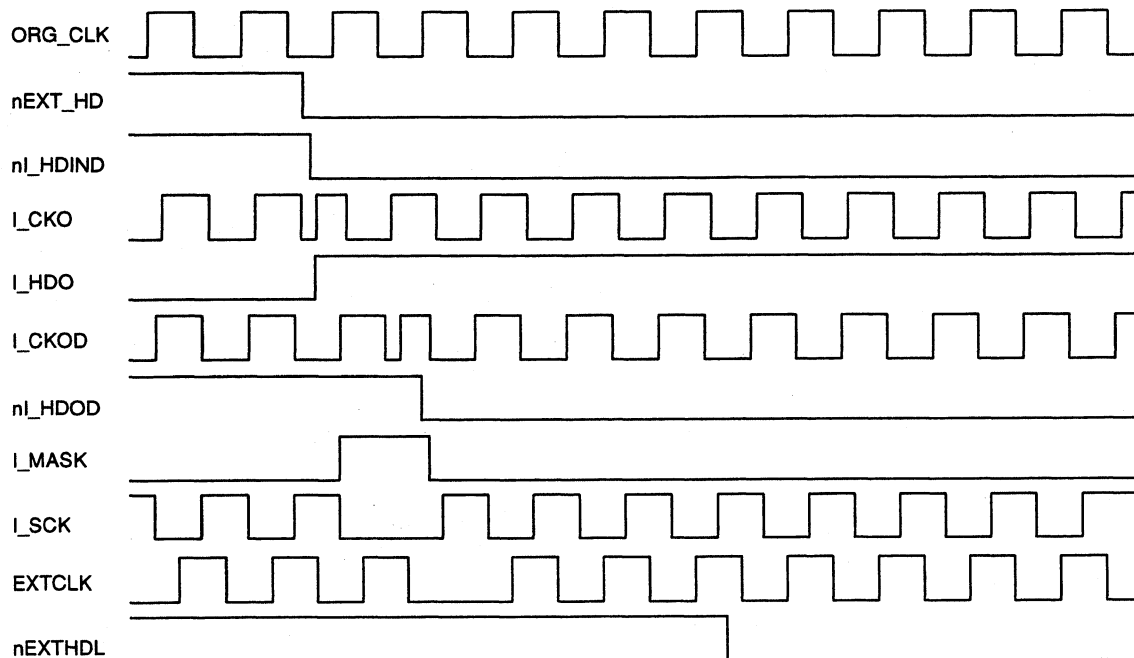
4-1-8. Masking Block

The masking block corrects the difference between the ideal reproduction color and three primary colors (Y, M, and C) for printed materials by a two-ROM data conversion system of main masking ROM and sub-masking ROM. The MAIN, SUB1, and SUB2 signals output from a color adjustment circuit (on the print side) are input to the main and sub-masking ROMs together with print color information signals (COLOR0 and COLOR1). The data masked using two ROM conversion tables is latched by IC3019 and output to the PRT-11 board as eight- bit print data.

4-1-9. Bus Switcher

The bus switcher is a circuit (IC3021 CXC8868Q) that switches a video bus. This circuit has three 24-bit ports (IOA, IOB, and IOC). The bus switching is controlled as shown below at pin 1 of the DIR0 terminal.

DIR0	DIR1	Bus direction
1	1	IOA → IOC
1	0	IOB → IOC
0	X	IOC → IOA

The output bus is set to "ALL LOW" by setting the FIX terminal "high". This function assigns the background color when the effective screen is decreased as shown below by the FIX, and DIR0, DIR1 terminals.

An analog composite blanking inversion signal is input to the 99-pin FIX terminal of IC3021 for clamping in this position and the video data sent to a D/ A converter is set to "00".
The BLNK signal from a DRAM control circuit is input to the 10-pin DIR1 terminal of IC3021 so as to switch the effective screen (IC3021 IOB [23:0]) and background (IC3021 IOA [23:0]).
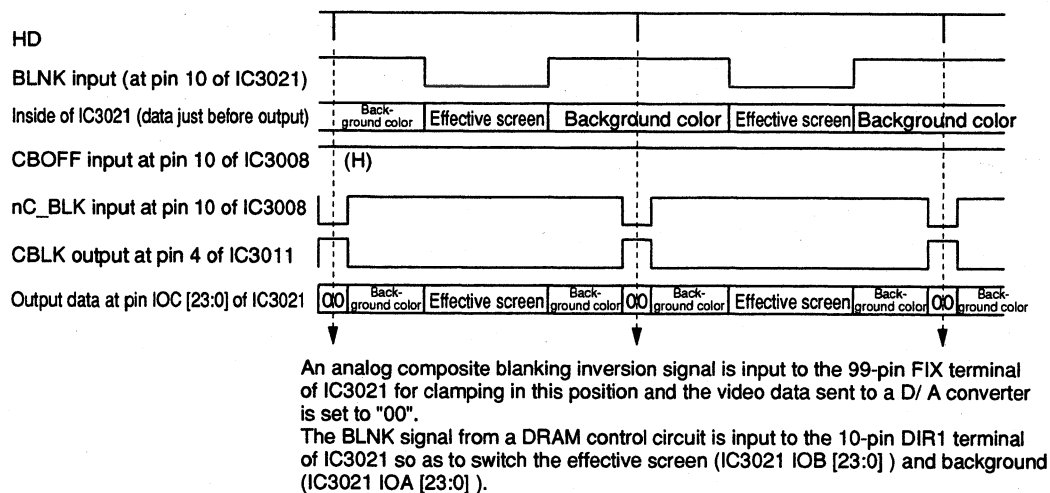
4-1-10. A/D and D/A Conversion Blocks

The A/D conversion block consists of three A/D converters (CXD1176Q IC1001 to IC1003). The analog RGB signal input from the VA-181 board is clamped using a clamp pulse nCLAMP signal. The clamped signal is then gain-adjusted using a CLP_REF signal that is input to the VREF terminal of an A/D converter. The D/A conversion block consists of a three-channel D/A converter (CXD1178Q IC1005). An eight-bit digital RGB signal is converted into an analog RGB signal using a D/A converter. The voltage switched by the half-tone ON/OFF signal from the SY-250 board is sent to the VREF terminal of the A/D converter to produce a half-tone video signal on the menu screen.
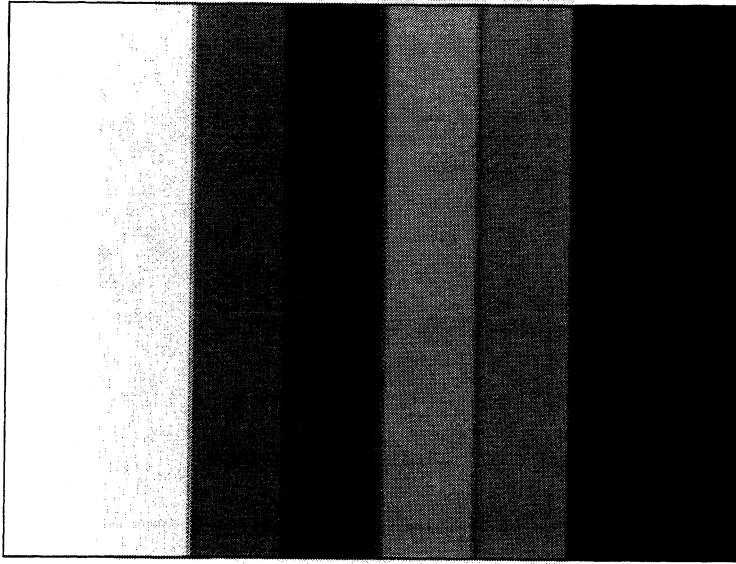
The waveform below is obtained when the color-bar signal shown above is input.

① VA-181 TP401 AD_R

TP401   AD_R

1H
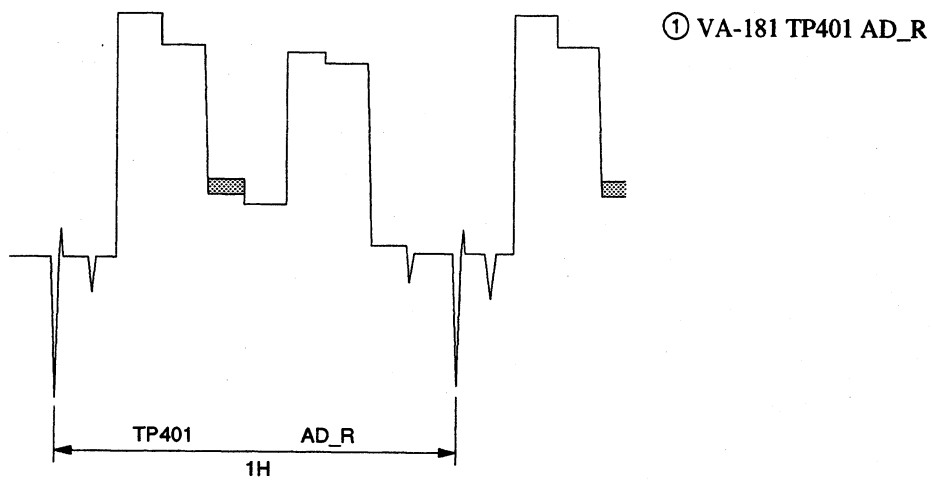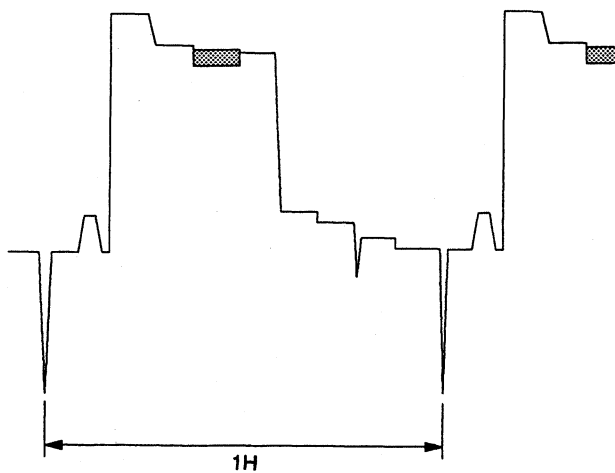
② VA-181 TP403 AD_G
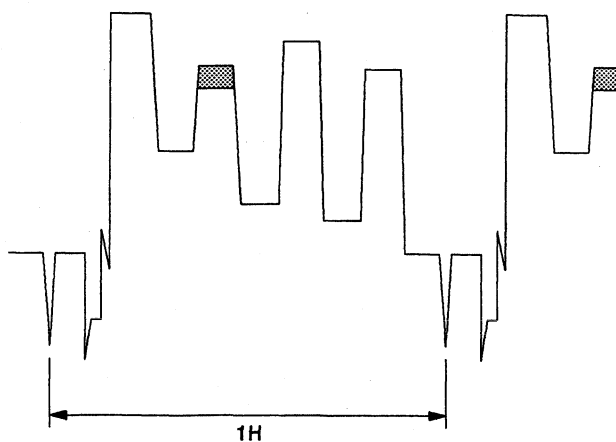
③ VA-181 TP404 AD_B
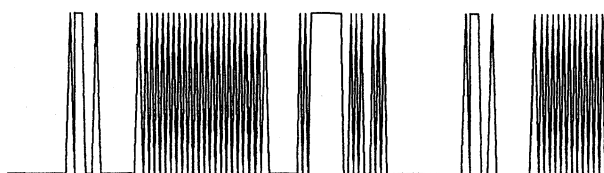
④ FMY-21
← TP4160 GAD3
(The third bit of the A/D-converted G-channel eight-bit data is was measured as an example. It varies with the input signal.)
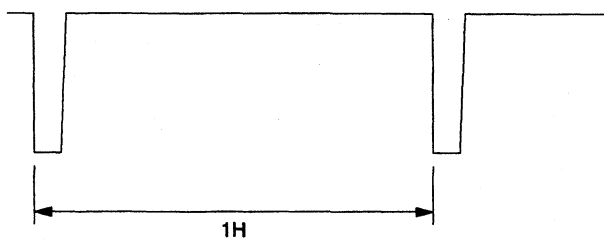
← TP4005 SWDHD (Triggered by this signal.)
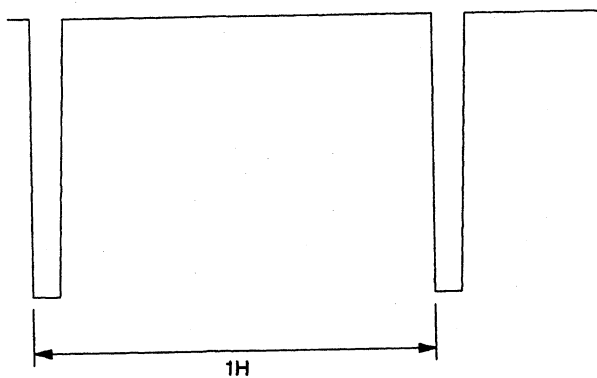
⑤ FMY-21
TP4005 SWDHD

1H
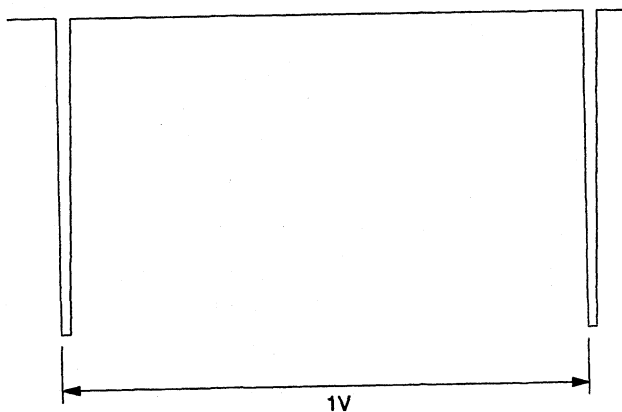
⑥ FMY-21
TP2035 SWDVD

1V
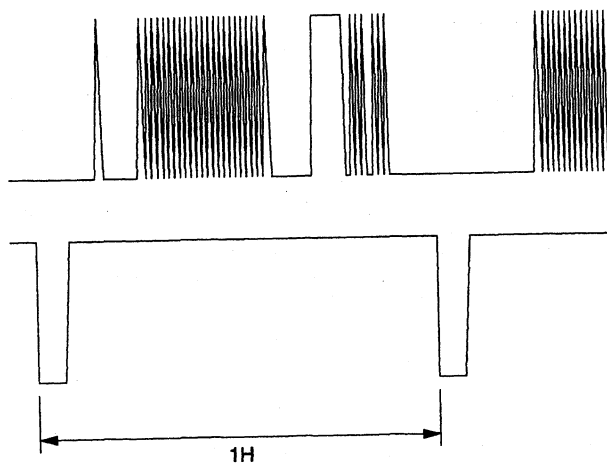
⑦ FMY-21 TP4136 GOD3
Third bit (of the eight bits) of the G-channel data output
from DRAM control circuit (IC4001) (Varies with the
image.)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)

1H
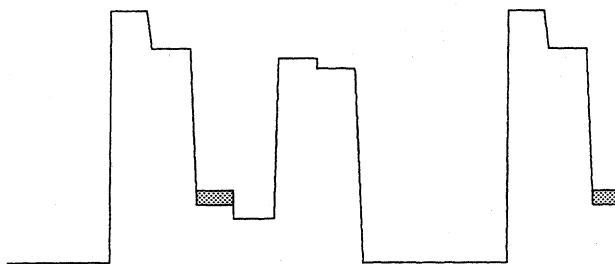
⑧ FMY-21 TP1004 DA-R
(R-channel output data of D/A converter on the FMY board)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)

1H
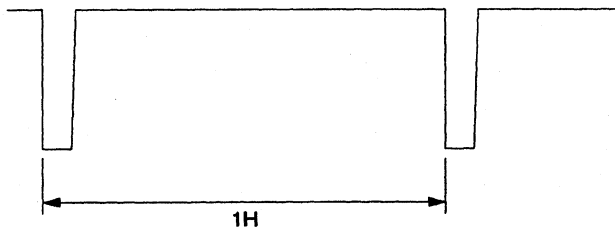
⑨ FMY-21 TP1005 DA-G
(G-channel output data of D/A converter on the FMY board)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)

1H
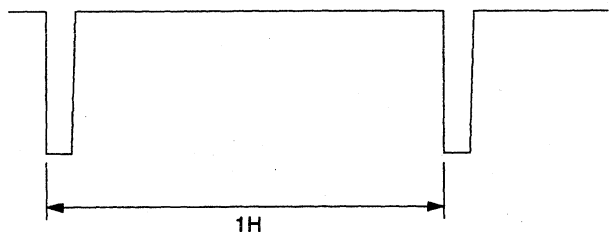
⑩ FMY-21 TP1006 DA-B
(B-channel output data of D/A converter on the FMY board)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)

1H
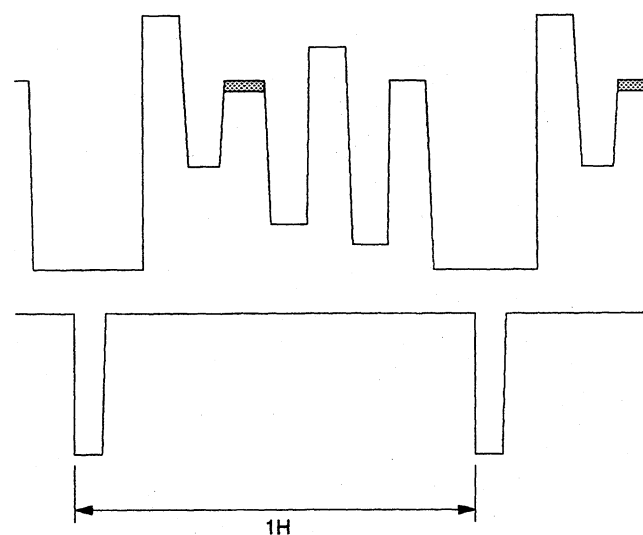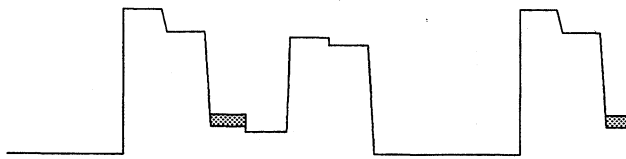
⑪ VA-181 TP803 ENC_R
   (R-channel output data of encoder)

← FMY-21 TP4005 SWDHD (Triggered by this signal)

1H
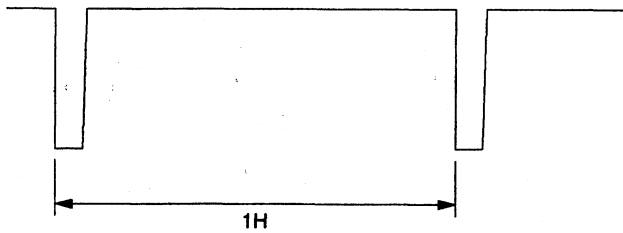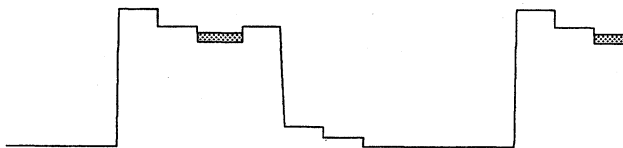
⑫ VA-181 TP802 ENC_G
   (G-channel output data of encoder)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)

1H
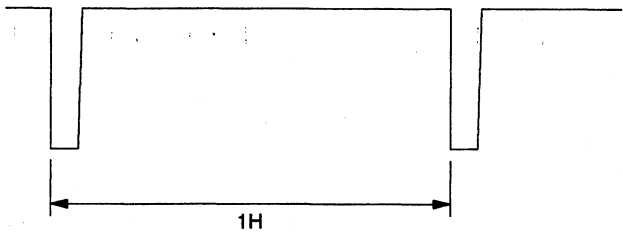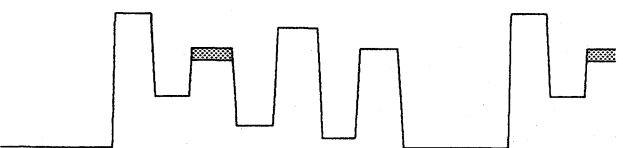
⑬ VA-181 TP804 ENC_B
   (B-channel output data of encoder)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)

1H
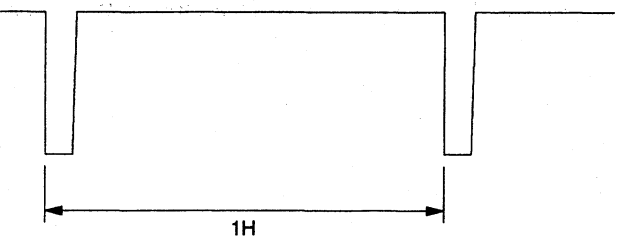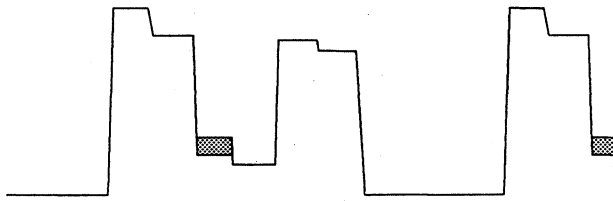
⑭ VA-181 TP901 R_MONI

← VA-181 TP904 SYNC_MONI(Triggered by this signal.)

1H
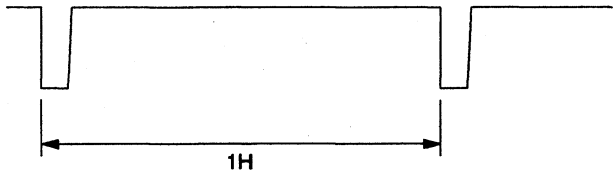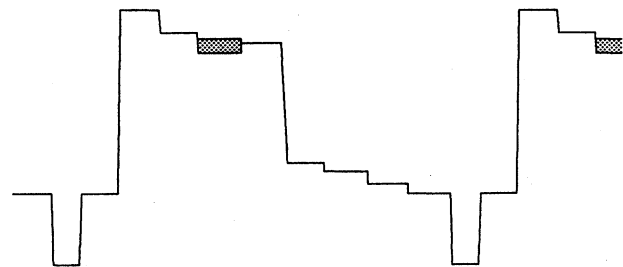
⑮ VA-181 TP902 G_MONI

← VA-181 TP904 SYNC_MONI(Triggered by this signal.)

1H
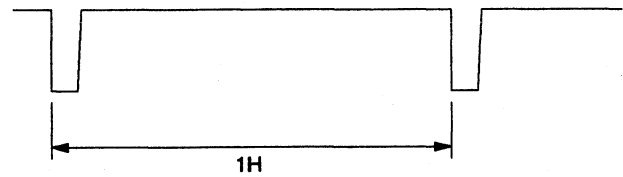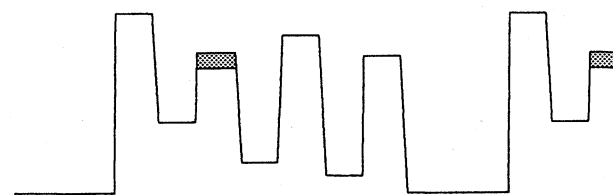
⑯ VA-181 TP903 B_MONI

← VA-181 TP904 SYNC_MONI(Triggered by this signal.)

1H
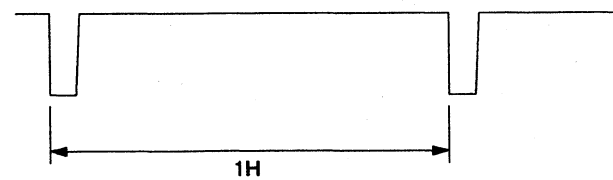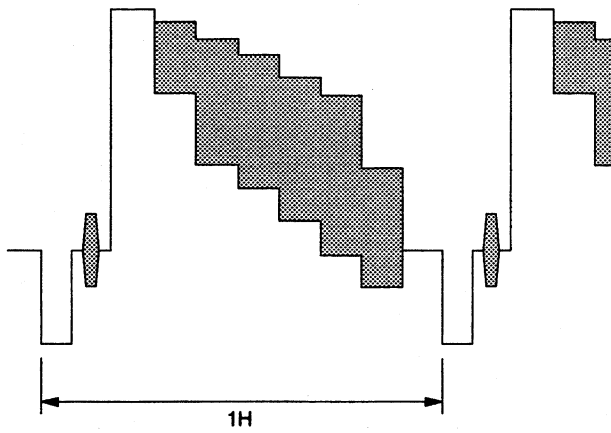
⑰ VA-181 TP907 V-MONI

Video signal

1H
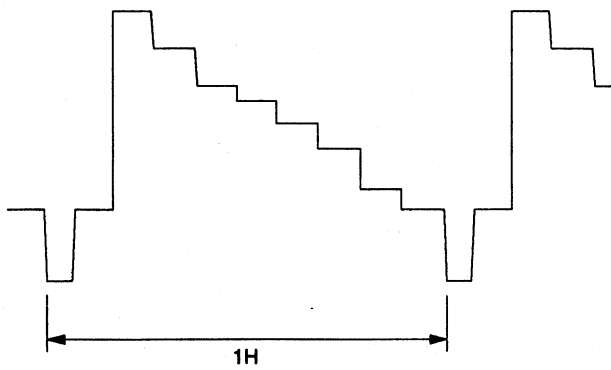
⑱ VA-181 TP905 Y-MONI

S-video Y signal

1H
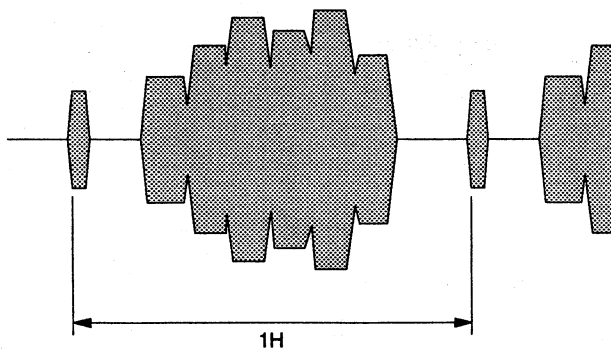
⑲ VA-181 TP906 C-MONI

S-video C signal

1H

4-2. CIRCUIT OPERATION DESCRIPTION OF SY-250 BOARD

4-2-1. Address Map

Address	
00000h to 3ffffh	EPROM(256KB)
40000h to 41fffh	EPROM(16KB)
60000h to 60003h	LCD
a0000h to a0001h	SCI(RS-232C)
f0000h to f0003h	KEY
ff710h to fff0fh	CPU built-in RAM
fff1ch to fffffh	CPU built-in I/O

4-2-2. Circuit Operation

(1) Reset circuit

The reset circuit uses PST572CMT (IC190). This circuit block outputs a reset pulse of approximately 60 msec during the power-on sequence. It also outputs a reset pulse when Vcc becomes less than 4.5 V during power-down operation. The reset pulse is input to the reset terminal (pin 63) of CPU (IC100). The SY-250 board outputs an external reset pulse from the reset output terminal (pin 59) so as to reset other boards when the CPU is reset.

(2) Oscillator circuit

The oscillator circuit uses a crystal oscillator (X100) and CPU and generates a clock of 9.8304 MHz. It also frequency-divides the clock using a CPU built-in timer, outputs a clock (changing corresponding to the RS communication rate) of 19.2 to 153.6 kHz from the clock output terminal (pin 96), and sends it to the serial communication circuit (IC250).

IC100 96pin	BAUDRATE
19.2 kHz	1200
38.4 kHz	2400
76.8 kHz	4800
153.6 kHz	9600

(3) Nonvolatile memory

The nonvolatile memory sets each menu to the 8192 x 8 bit EEPROM (IC220, HN58C 66FP-25) connected to a CPU bus and stores a caption character string. During system start, data is read from this nonvolatile memory.

(4) LED driving

PRINT LED: lights during print.
ALARM LED: Lights when an error occurs in a printer.

(5) Buzzer driving

The CPU outputs a buzzer drive pulse from the buzzer output terminal (pin 98) when any key is input or when an error occurs. No buzzer sounds when "BEEP: OFF" is set in the menu.

(6) Liquid crystal display (LCD) control

The CPU and LCD block are connected through a bus by HC245 (IC230). The LCD concentration can be adjusted when LCD-CONTR is set in the menu. No LCD display appears on the standard screen when the setting value is set to OFF.

(7) Screen display control

The screen display is controlled by μPD6466 (IC150) connected with CPU in series.
The V-SYNC and H-SYNC signals (at pins 7 and 8 of connector CN1004) from the VA-181
board must be input to operate μPD6466.

(8) Key input

The CPU and key matrix output circuit are connected through a bus by HC245 (IC 220).
HC138 (IC110) controls the key matrix circuit. The key is connected in the order of CN1002
→ PRT-11 → KY-402 and CN1003 → KY-401.

(9) Infrared remote control receiving circuit

The infrared remote control pulse sent by wireless remote control operation is transferred in the
order of IC302 → J001 → IC301 → CPU. Therefore, the wireless remote control operation
may malfunction when J001 fails. The remote control pulse sent by wired operation begins
with J001. In the wireless mode, the infrared remote control pulse is received by the infrared
remote control receiving circuit on the KY-401 board.

(10) Remote 2 input

A digital or analog foot switch is connected to J002. A digital signal is processed by IC302,
and an analog signal is processed by IC300.

(11) BUSY output

UP-2900MD(J) and UP-2950MD(J) mount switch SW140. The TTL output or open collector
output can be switched by selecting this switch.

(12) X-contact output

UP-2300P(CE) mounts a solid state relay (IC500). CPU drives the relay 2 V before an image is
fetched. No relay is driven when "IMMEDCAP: ON" is set in the menu.

4-2-3. VA-181 Board Control

(1) Electronic volume-related signal

    Function   : Finely adjusts the analog board.

    Signal lines : ADJ-LD   Data latching

                ADJ-CLK   Serial data clock

                ADJ-D1   Serial data

    Remarks   : The target is the circuit on the VA board.

                The center value during adjustment is adjusted by the semi-fixed VR on the VA board.

(2) Screen display-related signal

    Function   : Generates a signal for screen display.

    Signal lines : OSD_R   R data for screen display

                OSD_G   G data for screen display

                OSD_B   B data for screen display

                OSD_BLK   Blanking data for screen display

(3) Screen display control

    Function   : Specifies whether to superimpose the screen display.

    Signal line   : OSD_ON_OFF

                H : Superimpose   L : Not superimpose

(4) Input signal selection control

    Function   : Specifies an input signal.

    Signal lines : INPUT_SEL0

                H : Video   L : S-video

                INPUT_SEL1

                H : RGB   L : INPUT_SEL0 setting

    Remarks   : The INPUT_SEL0 setting is validated when INPUT_SEL1 is low.

(5) G on SYNC control

    Function   : Specifies whether to superimpose a sync signal on the G output signal.

    Signal line   : SYNC_ON_OFF

                H : Superimpose   L : Not superimpose

(6) Video circuit control

    Function   : Specifies a video circuit (525/625).

    Signal line   : SET_525_625

                H : 525 signal   L : 625 signal

(7) AGC control

    Function   : Specifies an AGC function.

    Signal line   : AGC_ON_OFF

                H : AGC control   L : No AGC control

(8) Output video signal

    Function   : Selects the output.

    Signal   : TH_NEE

                H : THROUGH   L : EE

(9) Signal input confirmation
   Function   : Confirms whether an input signal exists.
   Signal line : SIG_DET
                  H : No receive signal   L : Receive signal

(10) Input signal type confirmation
   Function   : Confirms whether the input signal is 525 or 625.
   Signal line : DET_525_625
                  H : 525 signal   L : 625 signal

(11) Video mode confirmation
   Function   : Confirms the video mode set by the user.
   Signal line : SW_NTSC_PAL
                  H : 525 signal   L : 625 signal
   Remarks   : High and low levels are determined by the selector switch on the rear panel of
                 UP-2900MD(UC) and UP-2950MD(UC). In other models, a high or low level
                 is fixed by mounting VA.

(12) Board mount information
   Function   : Confirms the VA board specifications.
   Signal lines : nMT_RGB
                  H : No RGB   L : RGB
   nMT_COMPATIBLE
                  H : Each NTSC or PAL   H : NTSC and PAL compatible

(13) Half-tone signal (FMY board)
   Function   : Specifies the video output.
   Signal line : HALFTONE
                  H: Half-tone display   L: Ordinary display

4-2-4. Communication

(1) RS-232C interface

μPD71051GU (IC250) is used for serial-to-parallel conversion, and MAX202CSE (I C280 and IC281) for level conversion.

The last output is +8 V when active and -8 V when inactive.

The output at test point is 0 V when active and +5 V when inactive.

Data transfer format

Data length	:	8 bits
Stop bit	:	1
Parity bit	:	None
Baud rate	:	1200, 2400, 4800, or 9600 bps (switchable)

Signal lines related to communication

RS-TXD	Printer → External communication data
RS-RXD	External → Printer communication data
RS-RTS	Active : External → Printer communication enabled
	Inactive : External → Printer communication disabled
RS-CTS	Active : Printer → External communication enabled
	Inactive : Printer → External communication disabled
RS-DTR	Active : Printer is in the operation state.
RS-DSR	Active : Printer is in the external operation state.

(2) Interface with PRT board

Bidirectional communication is performed by the asynchronous serial communication that uses a CPU built-in serial communication interface (CH.0).

Data transfer format

Data length	:	8 bits
Stop bit	:	1
Parity bit	:	None
Baud rate	:	4800 bps

Signal lines related to communication

PRT-TXD	SY → PRT communication data
PRT-RXD	PRT → SY communication data
PRT-RTS	H : PRT → SY communication disabled
	L : PRT → SY communication enabled
PRT-CTS	H : SY → PRT communication disabled
	L : SY → PRT communication enabled

(3) Interface with FMY board

Bidirectional communication is performed by the asynchronous serial communication that uses a CPU built-in serial communication interface (CH.1).

Data transfer format
Data length : 8 bits
Stop bit : 1
Parity bit : None
Baud rate : 19200 bps

Signal lines related to communication
FMY-TXD   SY → FMY communication data
FMY-RXD   FMY → SY communication data
FMY-RTS   H : FMY → SY communication disabled
          L : FMY → SY communication enabled
FMY-CTS   H : SY → FMY communication disabled
          L : SY → FMY communication enabled

Port 1	[36] A0 BUS	[37] A1 BUS	[38] A2 BUS	[39] A3 BUS	[40] A4 BUS	[41] A5 BUS	[42] A6 BUS	[43] A7 BUS
Port 2	[45] A8 BUS	[46] A9 BUS	[47] A10 BUS	[48] A11 BUS	[49] A12 BUS	[50] A13 BUS	[51] A14 BUS	[52] A15 BUS
Port 3	[27] D0 (D8) BUS	[28] D1 (D9) BUS	[29] D2 (D10) BUS	[30] D3 (D11) BUS	[31] D4 (D12) BUS	[32] D5 (D13) BUS	[33] D6 (D14) BUS	[34] D7 (D15) BUS
Port 4	[18] PRT-RTS Out-Port	[19] FMY-RTS Out-Port	[20] ADJ-LD Out-Port	[21] ADJ-CLK Out-Port	[23] ADJ-D Out-Port	[24] OSD-CLK Out-Port	[25] OSD-CS Out-Port	[26] OSD-D Out-Port
Port 5	[53] A16 BUS	[54] A17 BUS	[55] A18 BUS	[56] A19 BUS				
Port 6	[58] Capture Mask Out-Port	[59] ext-RESET Out-Port	[60] Halftone Out-Port	[69] AS BUS	[70] RD BUS	[71] HWE BUS	[72] LWE BUS	
Port 7	[78] RGB525/625 In-Port	[79] FMY-Capturing In-Port	[80] FMY Busy In-Port	[81] DET525/625 In-Port	[82] signal-detect In-Port	[83] EEPROM/RDY In-Port	[84] Remote2 in analog In-AD	[85] LCD cont. Out-DA
Port 8	[87] FMY-ExtVD IRQ0	[88] Remote2 in Digital IRQ0	[89] RS232C-rcv IRQ0	[90] *** FREE *** IRQ3/In-Port	[91] P_COOLING IRQ3/In-Port			
Port 9	[12] PRT-TXD TXD0	[13] FMT-TXD TXD1	[14] PRT-RXD RXD0	[15] FMY-RXD RXD1	[16] PRT-CTS IRQ4	[17] FMY-CTS IRQ5		
Port A	[94] Remote2 out Out-Port	[94] PRINT LED Out-Port	[95] ALARM LED Out-Port	[96] SCI Xfer Clock Out-Timer0	[97] THRU/EE Out-Port	[98] BUZZER Out-Timer2	[99] IR-detect1 In-Timer2	[100] IR-detect2 In-Timer2
Port B	[2] Input Select1 Out-Port	[3] Input Select2 Out-Port	[4] Set525/625 Out-Port	[5] AGC On/Off Out-Port	[6] X-DRIVE Out-Port	[7] Sync On G Out-Port	[8] Photo-X Out-Port	[9] OSD On/Off Out-Port
ETC	[10] (PULL-UP) RESO	[61] SCI IC Clock ø	[62] Vcc STBY	[63] Reset RESET	[64] Vcc NMI	[66] X'tal EXTAL	[67] X'tal XTAL	
	[73] Vcc MD0	[74] Vss MD1	[75] Vcc MD2	[76] Vcc Avcc	[77] Vcc Vref	[86] Vss Avss		Pin No. Connected circuit Function name

4-3. ANALOG VIDEO SIGNAL PROCESSING BLOCK

4-3-1. Outline

The analog block mainly consists of the two blocks below.

1) Interface block (IF-672 board) (IF-710 board)

A video signal is input and output through this interface block. This block also directly outputs the input signal when the monitor mode is set to THROUGH and when the power of this unit is turned off.

2) Decoder and encoder blocks (VA-181 board) These blocks fetch the input signal into memory and monitor the signal from memory.

The major functions of the decoder and encoder blocks are as follows:

* Input signal selection (Video, Y/C, or RGB)
* Conversion of video and Y/C signals into RGB signal
* Various user adjustments (Hue, color, gain, offset, and monitor RGB)
* Sync signal processing (NTSC/PAL detection, sync separation, signal detection, and AFC)
* Character screen display
* Monitor signal selection (Source memory)
* Conversion of signal from monitor into video and Y/C signals (Encoder)

4-3-2. IF-672 Board (IF-710 Board) (Interface Block)

A mechanical relay is used so that input and output signals are in the through state when an output signal is selected and when the power is turned off. The switch that sets in which mode (NTSC or PAL) this unit should be operated is also mounted on the IF-672 board. This switch is validated only when the power is turned on (in a combined NTSC/PAL model).
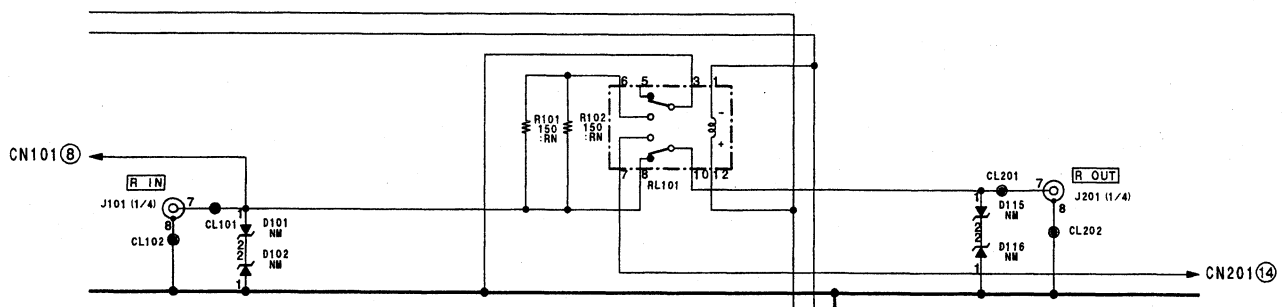
Fig. 1-1 Circuit Diagram of IF-672 Board

4-3-3. VA-181 Board (Decoder and Encoder Blocks)

Decoder and encoder circuits are separately described below.

(1) Input signal processing block (Decoder circuit)

1) RGB/SYNC input block

The R, G, and B signals passed through the IF-672 board are amplified to two times the normal using base-grounded amplifiers (Q101, Q102, and Q103). The signals are then input to video switches (IC305, IC306, and IC307). The signal level at that time is approximately 1.4 Vp-p (video). A sync input signal is buffered using base-grounded amplifiers (Q104 and Q110) and input to the video switch (IC602). Simultaneously, the signal is clamped by C120 and Q111 and pulse-converted by Q112 to trigger IC101. While the sync signal is input, IC101 is triggered and pin 6 is fixed to high level. When no sync signal is input, IC101 is not triggered and pin 6 is set low. In this case, a G input (SYNC ON GREEN) signal is selected by IC102.
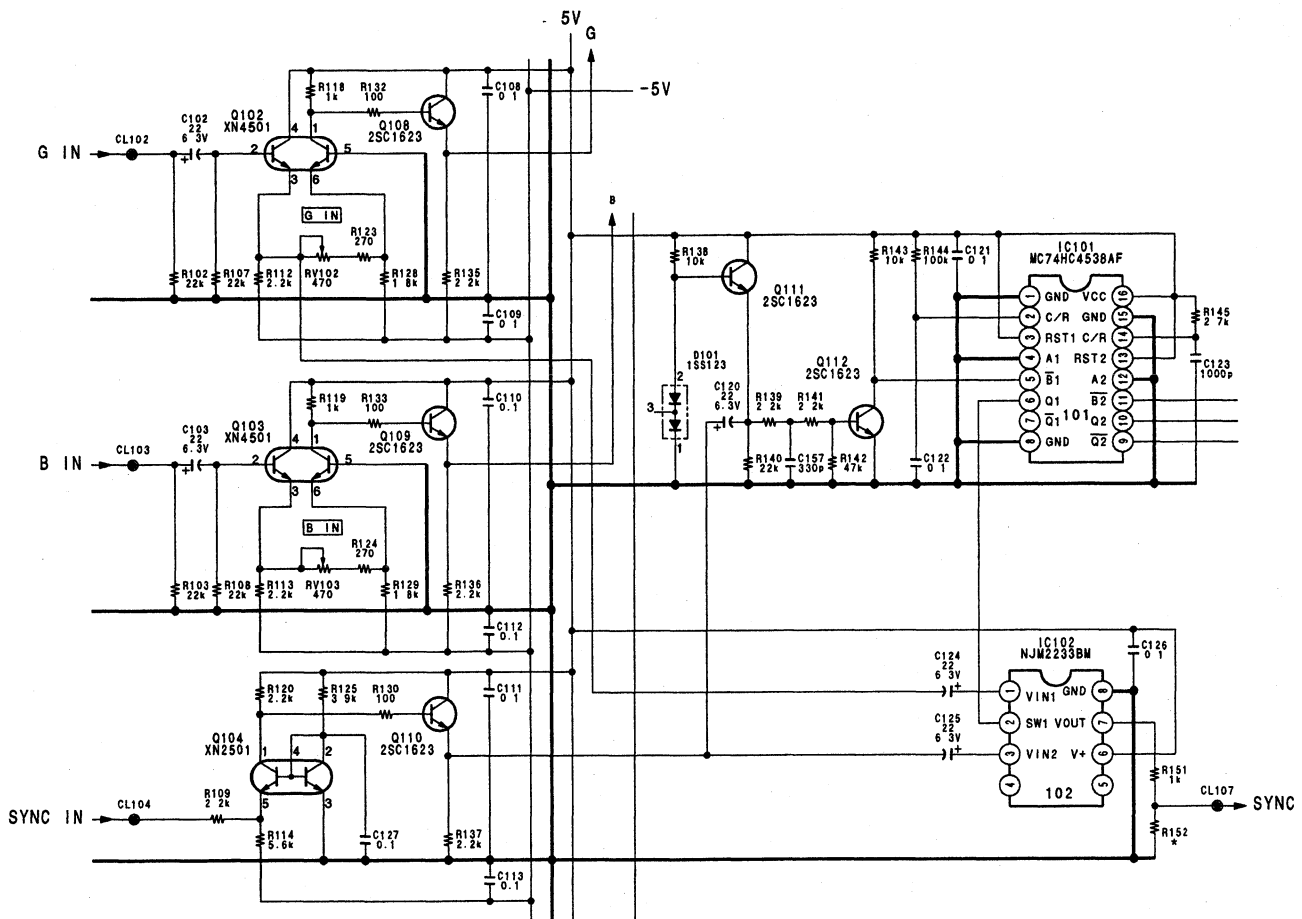
Fig. 1-2 Circuit Diagram of Input Block

2) Y/C input circuit

The Y/C input signal passed through the IF-672 board (IF-710 board) is buffered (by Q105 and Q106) and input to video switches (IC103 and IC608).

3) Video signal input circuit

The video input signal passed through the IF-672 board (IF-710 board) is amplified to about three times the normal by buffer amplifiers (Q202 and Q203) via a band limit filter (FL203). The signal is then input to the digital comb filter (DCF)(IC201). The signal level at that time is approximately
1.6 Vp-p.

4) Y/C separation block

The Y/C separation block consists of a digital comb filter (IC201) and 4 Fsc clock generator (IC608).

The video signal input to IC201 is separated into Y and C signals and output from pins 31 and 39, respectively. The Y signal is passed through a low-pass filter (FL201) and buffer (Q209) and input to the video switch (IC103). The signal is then selected as a Y signal of the Y/C input signal by IC103. The C signal is passed through a low-pass filter (FL202) and input to pin 26 of IC608. The signal is then selected at pin 27 as a C signal of the Y/C input signal.

The Y and C signals selected by an input selector are input to pins 2 and 8 of IC608, and the subcarrier (SC) and 4 Fsc clock locked to the burst portion of an input signal are output from pins 24 and 17. The subcarrier is used during source screen output of an encoder. The 4 Fsc clock is input to pin 11 of the digital comb filter to judge the existence of a burst signal in the digital comb filter. A high signal is output from pin 16 when the burst signal exists.

A low signal is output when no burst signal exists. This judgment is used for the bypass of the digital comb filter or the subcarrier selection of the encoder.
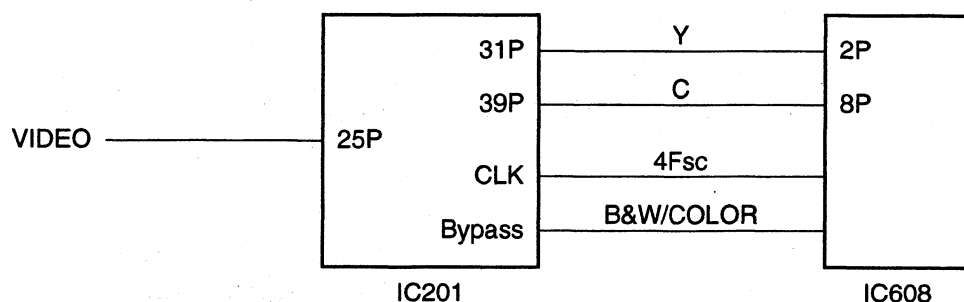
Fig. 1-3 Block Diagram of Y/C Separation

5) Sync separation circuit (IC606)

The Y signal selected by IC103 is input to pin 31 of IC606 via a delay line of 340 nsec. The sync signal selected by IC102 is input to pin 35 of IC606. It is also input to pin 24 of IC606 (video switch block). The signal input to pin 24 is sync-AGCed and output from pin 20. The output signal is then passed through a filter and input to pin 37. The signal input to pin 37 is sync-separated. At that time, the HD signal at pin 4, VD signal at pin 15, C sync signal at pin 40, and BF signal at pin 9 are output.
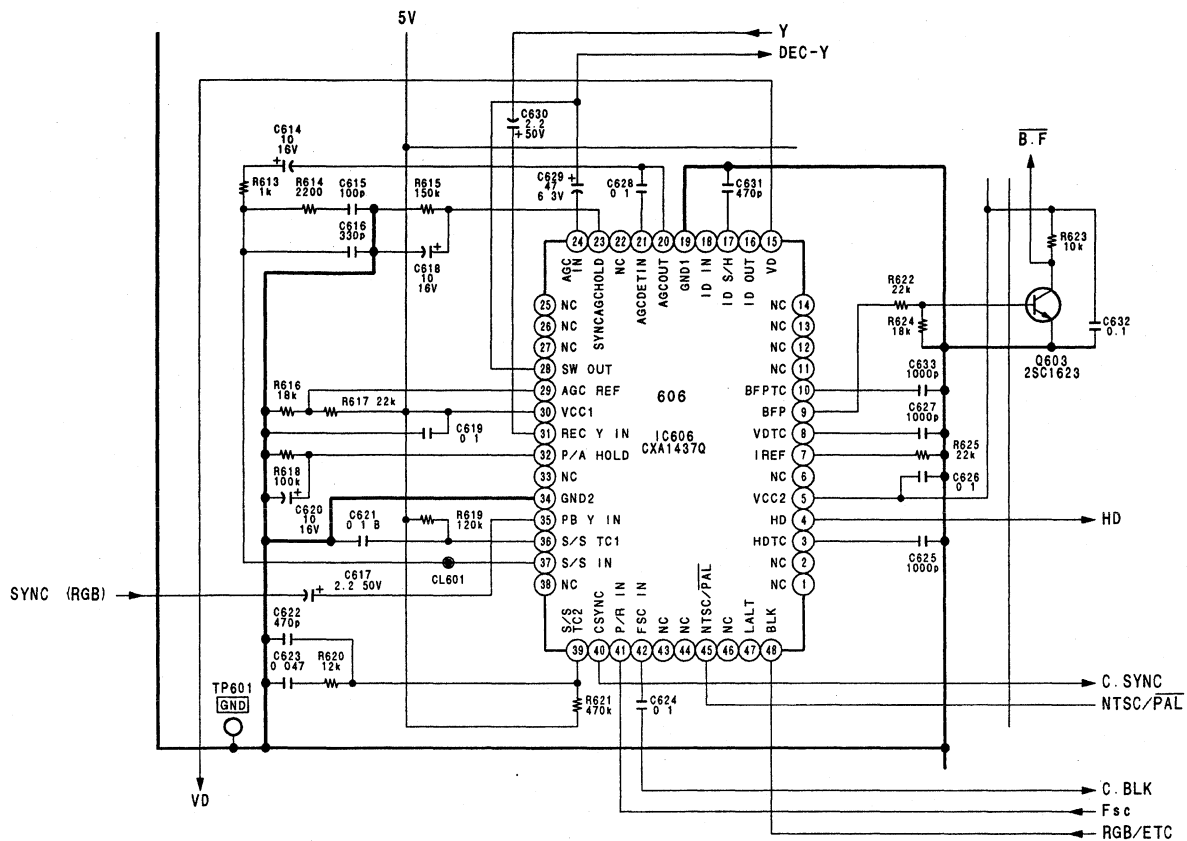
Fig. 1-4 Circuit Diagram of Sync Separation

6) Y/C jungle block

IC301 (CXA1213BS) performs the AFC operation of a sync signal and converts the Y/C signal into R, G, and B signals when a video signal or Y/C signal is input. IC301 also adjusts the picture quality of hue and color.

7) Sync system circuit in IC301

The Y signal output from IC606 is amplified to four times the normal using a video amplifier (IC308) so as to produce a signal level of 2 Vp-p. The signal is then input to pins 31 (H sync processing system) and 14 (V sync processing system) of IC301.

The signal input to pin 31 is sync-separated internally, and a pulse is output from pin 27 via AFC. The pulse is then input to pin 4 of IC601 (monostable multivibrator) to produce a pulse with pulse width of approximately 4 μsec lastly.

The signal input from pin 14 judges 50 Hz or 60 Hz in IC301 according to the period. For 50 Hz, a low signal is output from pin 13. For 60 Hz, a high signal is output from pin 13.

8) Y/C system circuit in IC301

The Y signal output from IC606 is amplified to two times the normal by IC308 to produce a signal level of 1 Vp-p. The signal is then input to pin 46. The C signal output from IC608 is input to pin 1. The input Y and C signals are processed in a circuit and output from pins 39, 38, and 37 as R, G, and B signals.

IC301 presupposes to be used for a monitor. IC301 also emphasizes the flesh tint in a demodulation axis when an NTSC signal is input. In a printer, it is important to reproduce the primary color accurately. Therefore, the demodulation axis must be corrected theoretically. The correction is performed by resistor matrix circuits (R326, R327, R325, R328, and R329). Since no correction is required during PAL demodulation, the matrix circuit is set to OFF by IC302 and IC303.

9) RGB, Y/C, and video selection circuit

The R, G, and B signals output from IC301 are input through buffers (Q305 to Q 307) to IC305, IC306, and IC307. The RGB input signals and other input signals are selected in IC305, IC306, and IC307.

10) VD pulse generator circuit

The VD pulse output from pin 15 of IC606 is input to IC604 (monostable multivibrator) and output as a pulse of approximately 400 μsec. The retrigger inhibit mode of IC604 is used for masking to prevent a V SYNC signal from being disturbed during special PB of VTR.

11) Electronic VR circuit (IC611)

An eight-channel D/A converter (IC611) is used to perform the user adjustment electronically. The eight-channel D/A converter can be adjusted in eight-bit precision by sending a command from the system control board (SY-250) to pins 15, 16, and 17 of IC611. The output signals at pins 4 and 5 are assigned for hue and color adjustment and input to IC304. The input signal is then inverted and amplified, and adjusted in the center by RV307 and RV306.

The output signals at pins 3, 6, 7, 2, 18, and 19 are used for offset, gain (AGC ON), gain (AGC OFF), and monitor RGB adjustments.
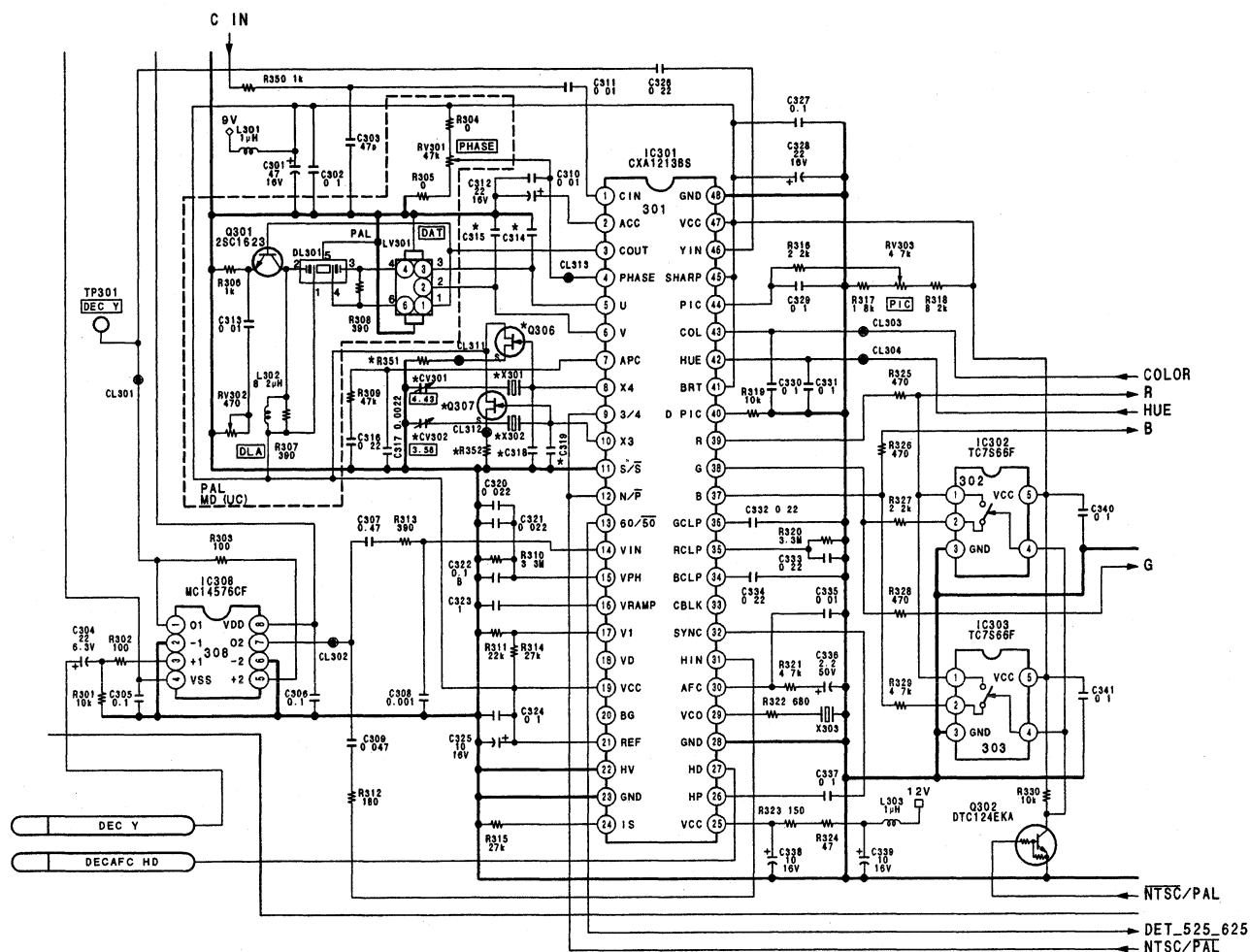
Fig. 1-5 Circuit Diagram of Decoder Block

12) AGC circuit

This unit uses a peak AGC circuit suitable for a medical market. The R, G, and B signals output from IC305, IC306, and IC307 are pedestal-clamped by IC401, IC402, and IC403. Next, the maximum voltage of the RGB signals is extracted by Q401, Q403, and Q 405 and input through a low-pass filter to pin 3 of IC407 (operational amplifier). The input signal is input through a voltage follower to pin 6, inverted and amplified, and output from pin 7. At pin 7, the signal is center-adjusted by RV401.

The signal output from pin 7 is mixed with a D/A converter output signal for user adjustment and input to pin 3 of IC409. The signal is then input through a voltage follower to pin 7 of IC408 (analog switch). Only the user adjustment signal from pin 6 is selected as a (AGC OFF) output signal. The output signal at pin 1 of IC408 is used for gain adjustment of amplifiers IC404 to IC406. The pedestal-clamped R, G, and B signals are band-limited by FL301 to FL303 and gain-controlled by amplifiers IC404 to IC406. The signals are then sent to the FMY-21 board in 2 Vp-p by a drive amplifier.
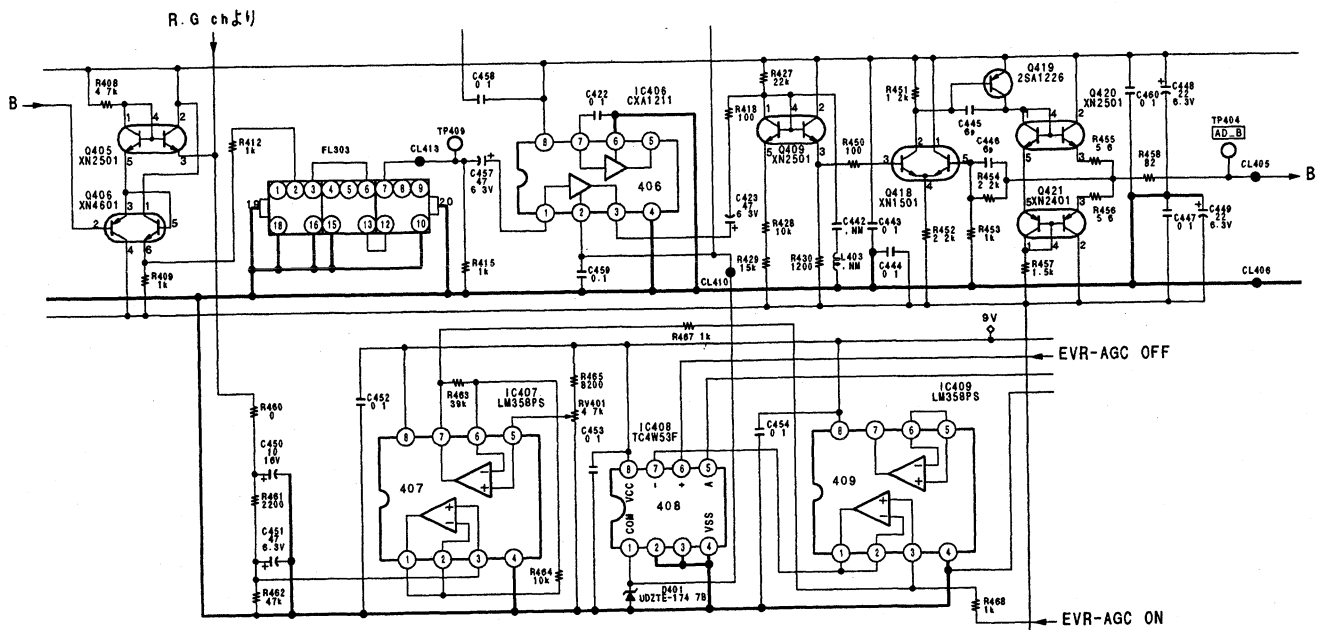
Fig. 1-6 Circuit Diagram of AGC Circuit

14) Clamp pulse generator circuit

A clamp pulse is generated from the HD and BF output pulses of IC606. The two types of pulses are required for the following reason. The BF pulse is used when the input signal is selected as an RGB signal. No sync signal is usually added to the RGB signal. However, there is sometimes an RGB signal (e.g., SYNC ON G) to which a sync signal is added. In this case, the signal must be clamped in the burst flag position. An input signal is passed through IC301 for conversion into an RGB signal when it is a Y/C or video signal. The RGB output signal of IC301 is sliced in the sync signal portion. However, the system malfunctions when the signal is clamped in the BF position because the burst signal is demodulated. Therefore, the signal must be clamped in the former sync position, that is, the HD position. For the reason described above, the phase of a clamp pulse is selected by an input signal.

The HD and BF signals output from IC606 are sent to IC605 and selected by an input signal. The signals are then sent to IC603 and selected as an AFC HD signal according to the existence of an input signal to prevent that a negative potential is applied to the A/D converter. The signals output from IC603 are sent to IC101 (monostable multivibrator) to produce a pulse of approximately 2 μsec and fed for the AGC circuit and A/D converter.
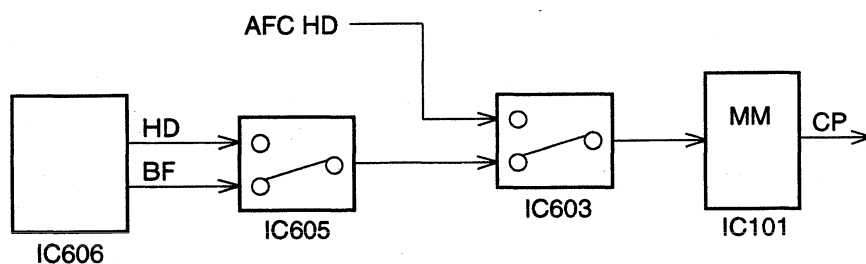
Fig. 1-7 Clamp Pulse Generation Block

(2) Output signal processing block (Encoder circuit)

1) Character mixing block

Since the character mixing block in R, G, B channels has the same circuit configuration, only the R-channel block is described below. The R signal output from the FMY-21 board is input through Q809 (buffer) to IC802 (VCA). IC802 is adjusted by monitor R for user adjustment. The signal output from IC802 is input through base-grounded amplifiers (Q810 and Q811) and a buffer (Q812) to IC804.

A character signal is output from the SY-250 board and reduced in level by R827 and R828. The signal is then input through a buffer (Q813) to IC804. IC804 is a 3-channel video switch with pedestal clamp. IC804 operates when a clamp pulse is input to pin 10. The video signal and character signal output from memory are mixed in IC804. A switching pulse is fed from the SY-250 board and input through IC803 (AND circuit) to IC804. IC803 is used for masking of a character signal. The R signal output from IC804 is input through a buffer (Q817) to IC901 (encoder).
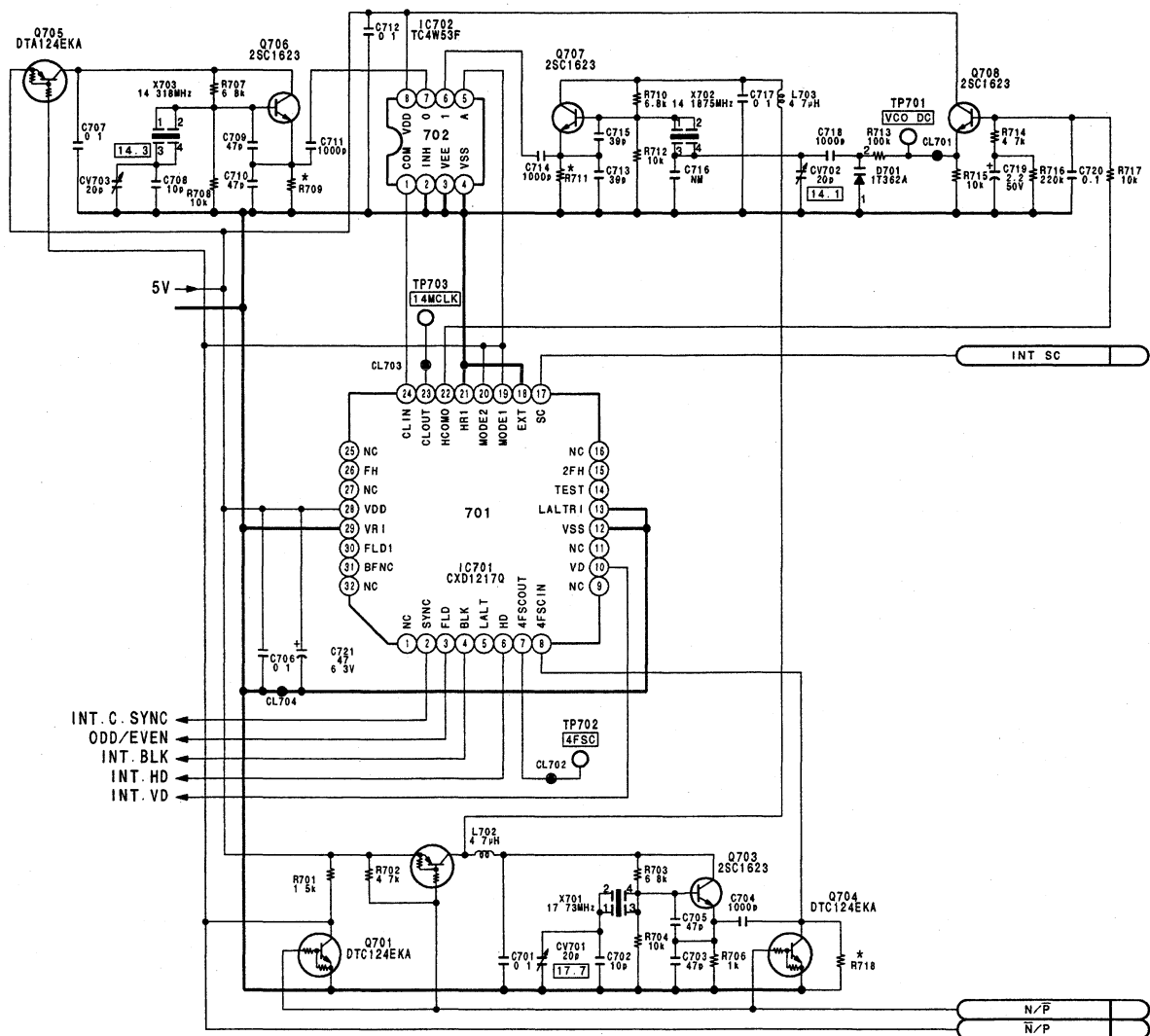
Fig. 1-8 Circuit Diagram of Internal Sync Generator

2) Subcarrier selection block for encoder

A subcarrier is required to convert (encode) an RGB signal into video and Y/C signals.
In this unit, the burst signal of a monitor output signal is synchronized with the input signal
when an input signal is a video or Y/C color signal. In other cases, the internally generated
subcarrier is used. This selection is performed by IC615. The input sync subcarrier output from
pin 24 of IC608 is converted in waveforms and input to pin 6 of IC615. The internally generated
subcarrier is output from pin 17 of IC701 (sync generator) and input to pin 7 of IC615. The
subcarrier selected by IC615 is output from pin 1 and input through a low-pass filter (consisting
of Q608 and Q609) to pin 6 of IC901.

3) Encoder block (IC901)

IC901 internally processes each signal and outputs video and Y/C signals by in putting an RGB
signal, subcarrier (SC), and CSYNC signal. IC901 is compatible with both NTSC and PAL
systems. However, the value of a resistor connected to pin 16 must be changed when each
system is set. This selection is performed by Q902.

4) Sync generator block (IC701)

When the monitor output is in the MEMORY mode, a monitor output signal is generated using
various sync signals that IC701 generates. IC701 generates CSYNC,
HD, VD, VF, and SC signals by inputting a clock from the external block. The power of a
circuit block is turned on or off using transistors (Q702 and Q705) when the NTSC and PAL
modes of the peripheral circuit are selected. In the NTSC mode, IC701 operates when oscillator
circuit X703 is turned on. In the PAL mode, IC701 operates when oscillator circuits X701 and
X702 are turned on.
Q708 is a voltage-controlled crystal oscillator (VCXO). Q708 sends the error voltage output
from pin 22 of IC701 to a variable capacitor (D701) via a low-pass filter. An oscillating
frequency is changed to constitute a PLL circuit by changing the load capacity of X702.

4-3-4. FMY-21 Board (A/D and D/A converters)

1) A/D converter block

The A/D converter block mainly consists of three A/D converters (IC1001 to IC1003, CXD1176Q).

The analog RGB signal input in approximately 2.0 Vp-p from the VA-181 board is received using a buffer and converted into an eight-bit digital signal using an A/D converter.
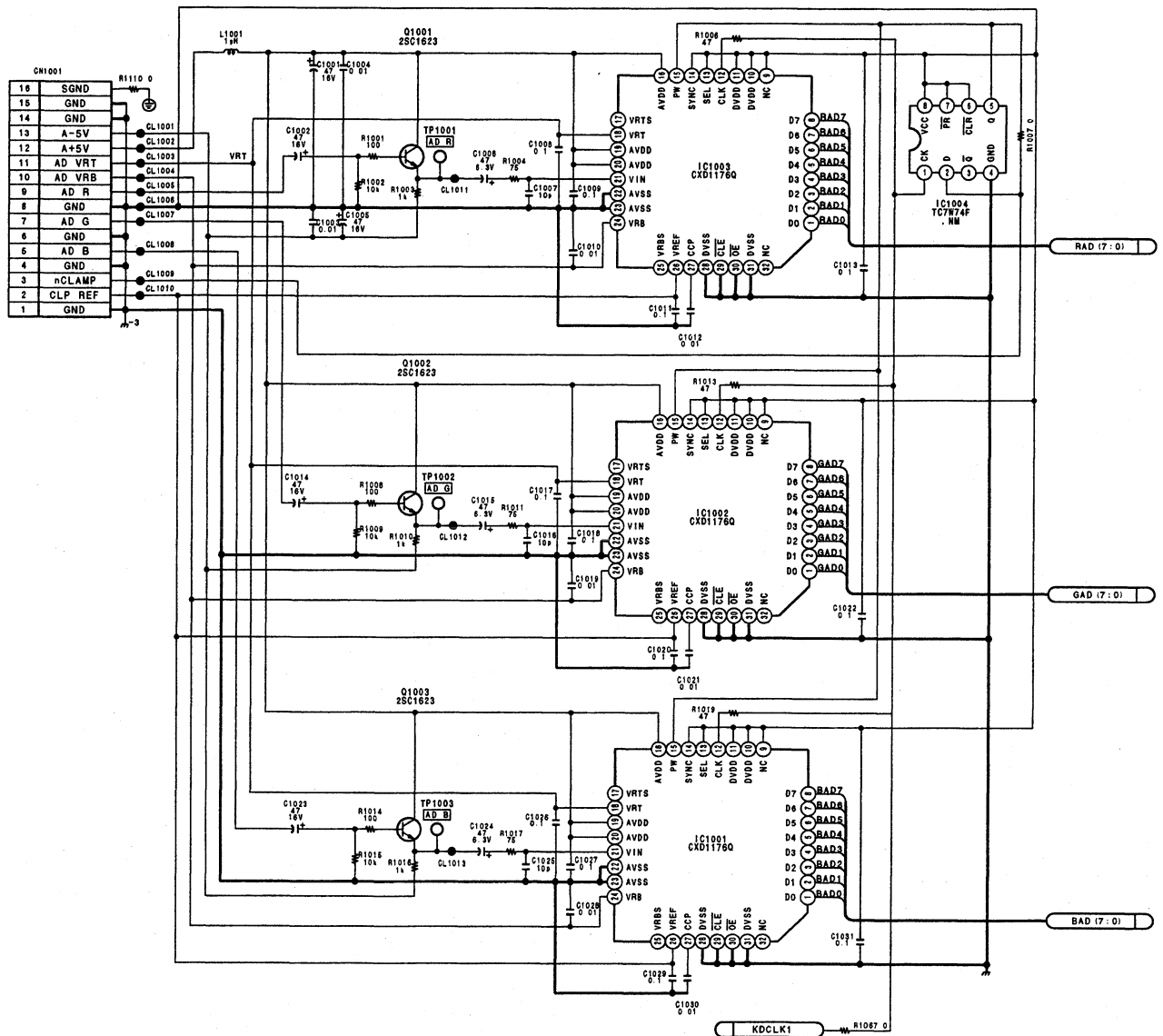
Fig. 1-9 Circuit Diagram of A/D Converter

2) D/A converter block

The D/A converter block consists of a three-channel D/A converter (IC1005, CXD1178Q) and buffer.

Each eight-bit digital RGB signal is converted into an analog RGB signal using a D/A converter. At that time, the voltage selected by the half-tone ON/OFF signal from the SY-250 board is sent to the V REF terminal of the D/A converter so as to produce a half-tone video signal on the menu screen. Lastly, the signal is output through a buffer to the VA-181 board in approximately 2.0 Vp-p .
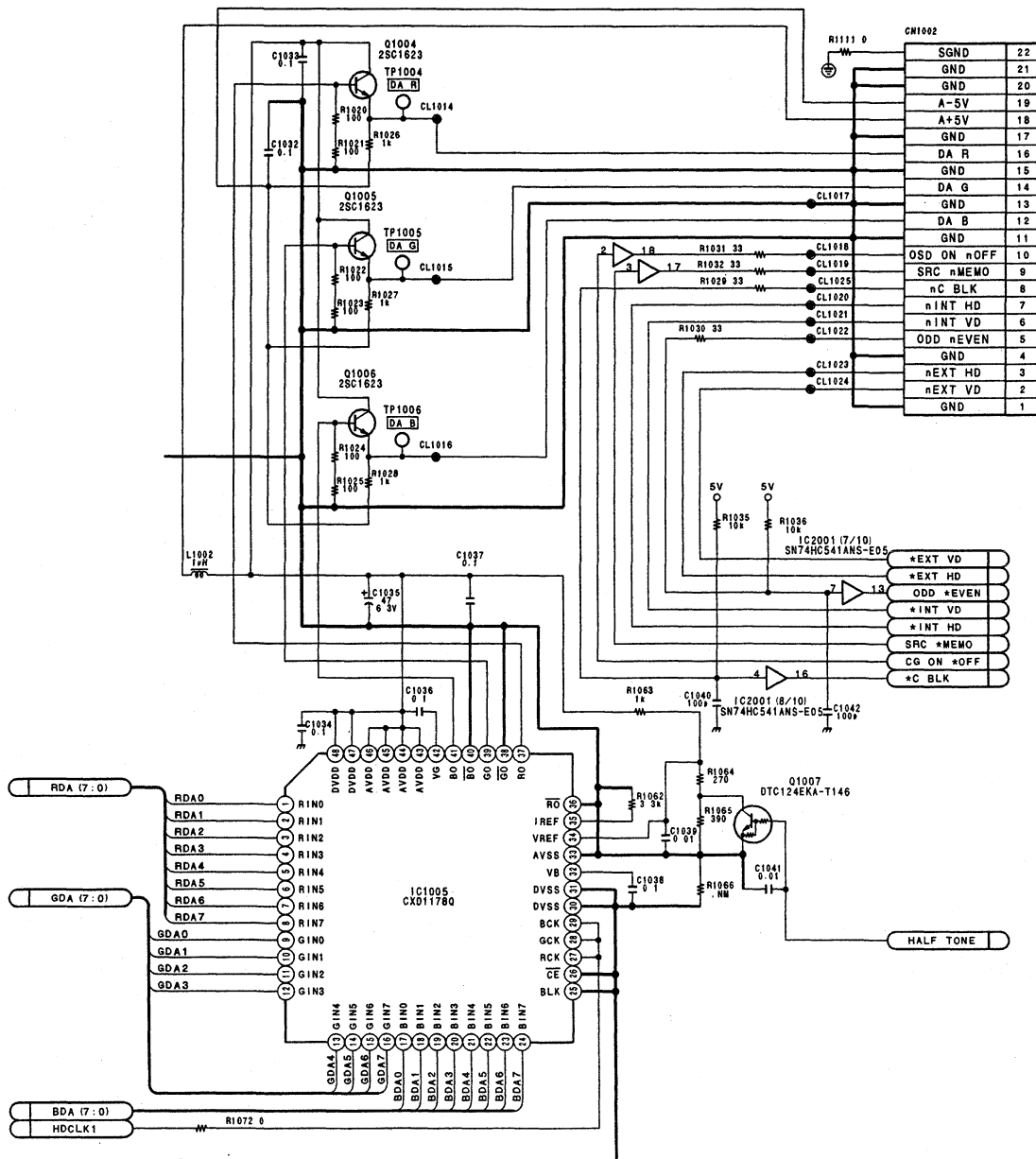
Fig. 1-10 Circuit Diagram of D/A Converter

4-4. PRINT CONTROL SECTION (PRT-11 BOARD)

Outline

PRT-11 board is consisted of mechanism control block and head control block.

The mechanism control block is composed following circuits.

    Fan motor drive circuit
    Ribbon motor drive circuit
    Paper supply motor drive circuit
    Head motor drive circuit
    Tray motor drive circuit
    Platen motor drive circuit
    Various kinds sensor detection circuit
    (Paper ejection motor drive circuit)

The head control block is composed following sections.

    γ correction ROM(IC206)
    PQC IC(IC207)
    Head control IC(IC208)
    Number lines correction IC(IC210)

4-4-1. Fan motor drive circuit

Fan motor is driven by the control signal from pin 80 of IC112(CPU). When the temperature of thermal head is higher than the certain value in the printing or stand-by mode, this signal is set to the "LOW", the fan motor is rotated.
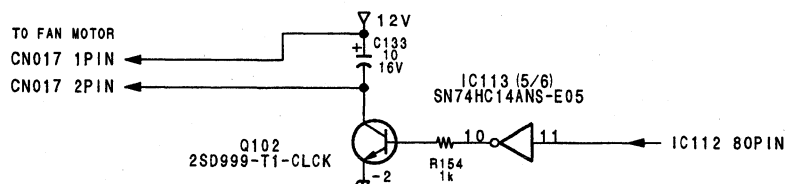
4-4-2. Ribbon motor drive circuit

The ribbon motor is driven with PWM by the control signal (active L) from the pin 45 of IC112.
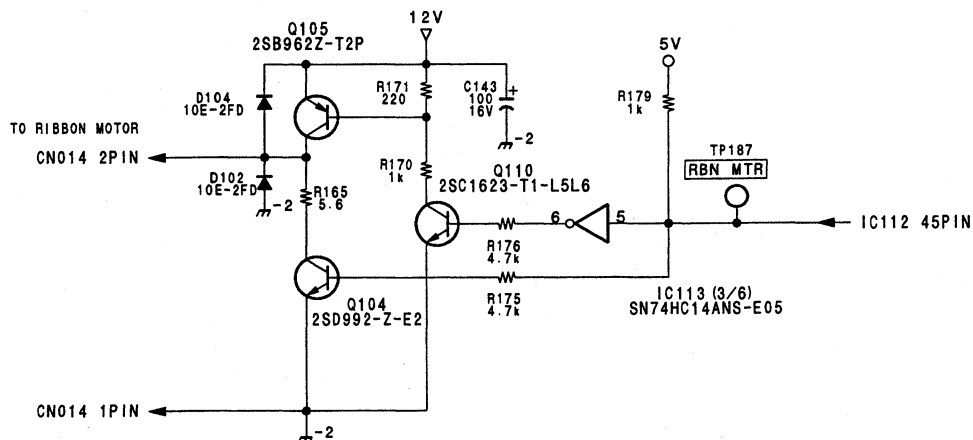
4-4-3. Paper supply motor drive circuit

The paper supply motor is driven with PWM by (active L) from pin 46 of IC112(CPU) and pin 9 of IC115 (parallel port).
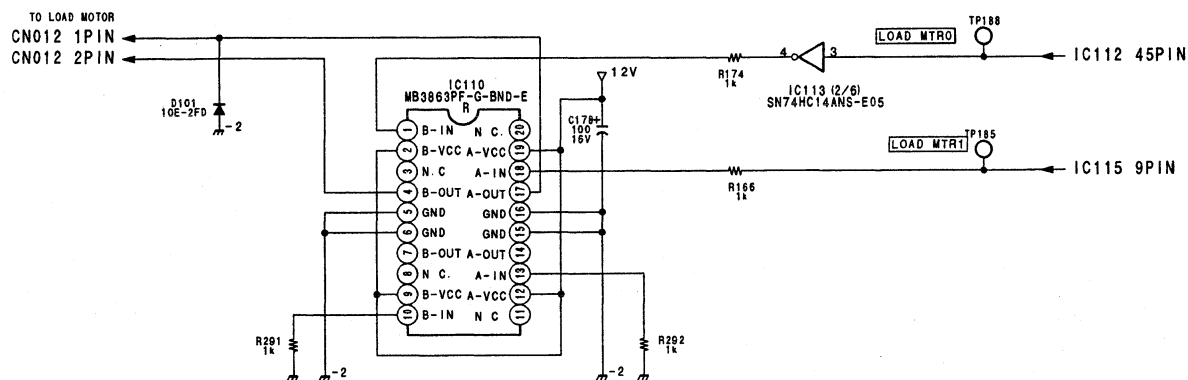
4-4-4. Head motor and tray motor drive circuit

The control signal from $\left\{ \begin{array}{l} \text{pins 42 and 43 of IC115(parallel port) head motor} \\ \text{pins 40 and 41 of IC115(parallel port) tray motor} \end{array} \right.$

is entered to $\left\{ \begin{array}{l} \text{the pins 10 and 13 of IC105 head motor .} \\ \text{pins 1 and 18 of IC105 tray motor .} \end{array} \right.$

The motor is driven by the voltage from $\left\{ \begin{array}{l} \text{pins 7 and 14 head motor .} \\ \text{pins 4 and 17 tray motor .} \end{array} \right.$

The up and down brakes are performed with following assemblies.

	Pins 40 and 42 of IC115	Pins 41 and 43 of IC115
Up	H	L
Down	L	H
Brakes	H	H
Others	L	L

4-4-5. Platen motor drive circuit

The platen is driven by stepping motor via the belt. There are two stepping motor excitation system, two phases and one- two phases. Each phase(A, A, B, B) control signal is outputted from pins 21 through 24 of IC112(CPU). The control signal is inputted to the pins 6, 5, 17 and 16 of IC101 as active L via the buffer IC104. The stepping motor is driven by chopper driving.

The output current value of IC101 is changed by control signal of pins 25 and 26 of IC112(CPU) and the torque of the stepping motor is changed.

	pin 25 of IC112	pin 26 of IC112	output current value
normal	H	L	530 mA
power up	L	L	840 mA
power down	H	H	270 mA
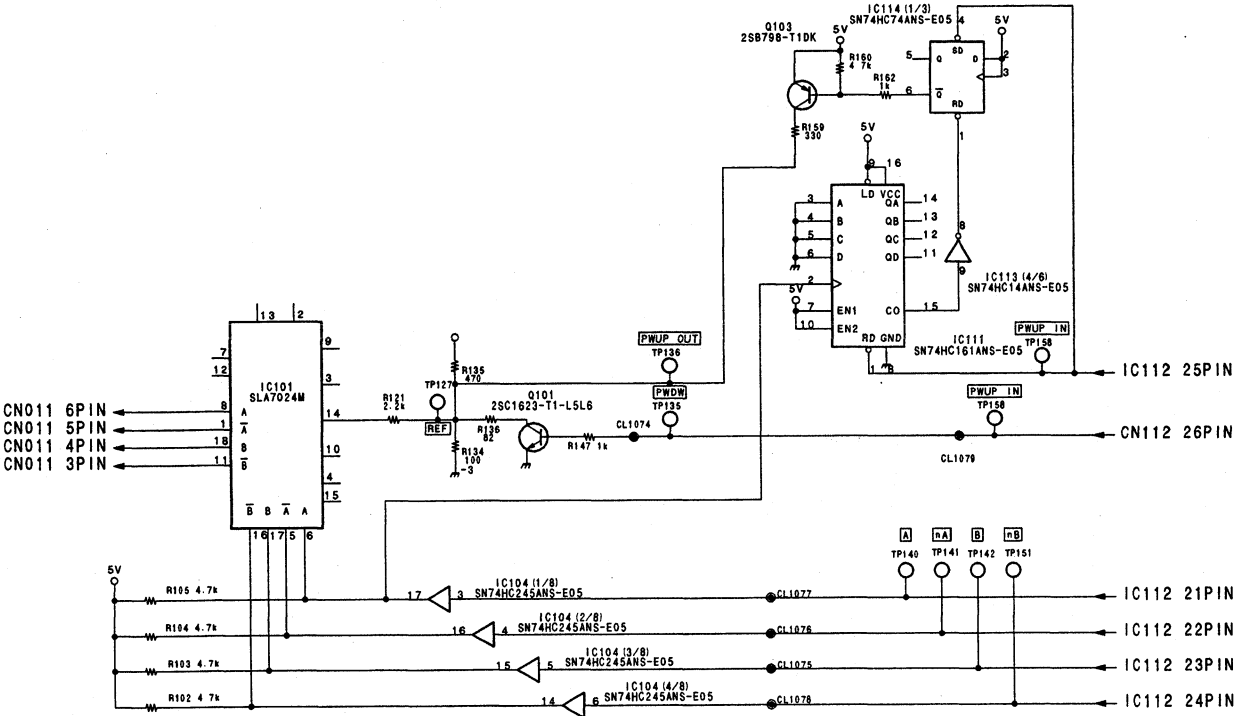
4-4-6. Various kinds sensor detection circuit

Platen position sensor   Paper sensor
Platen cover sensor   Paper supply timing sensor
Head position sensor   Eject paper timing sensor
Ribbon cassette sensor   Tray position sensor
Paper jamming sensor   Paper ejector sensor
Ribbon code sensor   Ribbon FG sensor
Bar code sensor   Paper supply FG sensor
Paper size sensor

The following sensors are performed A/D conversion.
Ribbon code sensor
Paper jamming sensor
Bar code sensor

These threshold levels are successively changed. The threshold level is fetched from E²PROM
when the power is turned ON. After print is ended and the bar code is read, suitable setting value is
calculated and is written in the E²PROM.
(The level can be ensured in the mechanical tool mode.)

1) Platen position sensor
     Route   : SE-419 to SE-417 to PRT-11
     TP   : PRT-11 board TP102
     Function   : Home position distinction of platen
     Level   : H Home position
                     L Except home position

2) Platen cover sensor
     Route   : SE-419 to SE-417 to PRT-11
     TP   : PRT-11 board TP105
     Function   : Distinction whether platen cover is opened or not
     Level   : H Cover is opened.
                     L Cover is closed.
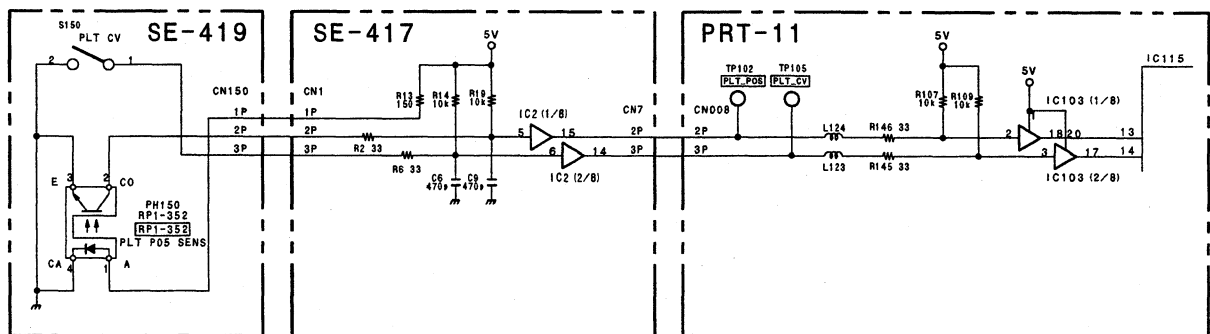
3) Head position sensor

Route : SE-420 to SE-417 to PRT-11
TP : PRT-11 board TP110(HED_POS 0),TP113(HED_POS 1)
Function : Distinction of thermal head position
Level :

	HED_POS 0	HED_POS 1
Indefinite	H	H
FF1 position	H → L	H
FF2 position	L → H	H
Print position	H	L
Home position	L	L
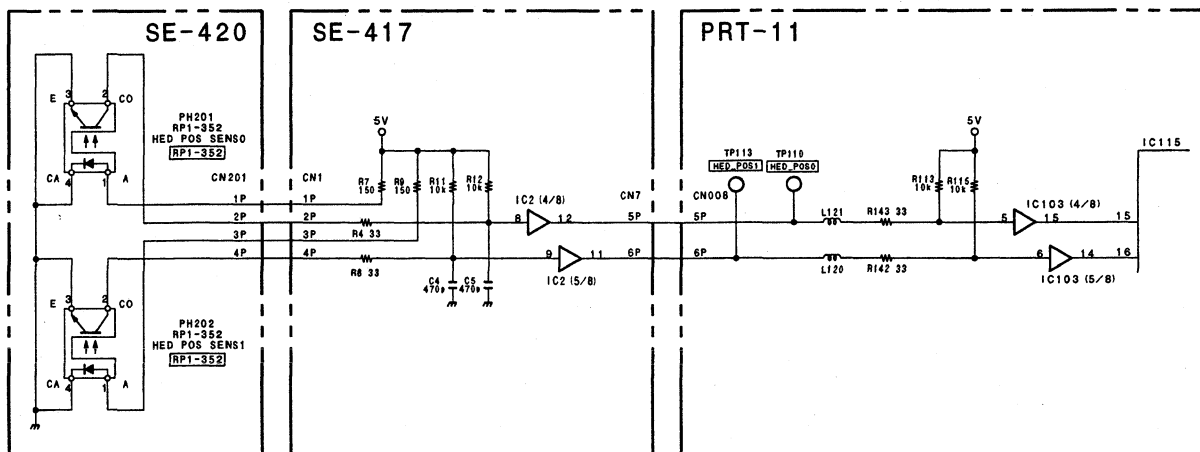
4) Ribbon cassette sensor

Route : Microswitch to SE-417 to PRT-11
TP : PRT-11 board TP108
Function : Distinction whether the ribbon cassette is inserted into the unit or not.
Level : H The ribbon cassette is not inserted.
: L The ribbon cassette is inserted.

SE-417

5V

R15
10k

MICRO SWITCH   CN2

1

2   R3 33   C7   7 ▷ 13   CN7
              470p   IC2 (3/8)   4P

PRT-11

TP106
RBN_CST

5V

R111
10k

CN008
4P

4P   L122   R144 33   C112   4 ▷ 16   22
              470p   IC103 (3/8)

IC115

5) Paper jamming sensor

Route : SE-422 to SE-417 to PRT-11

TP : PRT-11 board TP125

Function : Distinction whether the print paper is correctly supplied or not.
Distinction whether the print paper remains into the mechanism during stand-by mode or not.

Level : H There is not the print paper into the mechanism.

: L There is the print paper into the mechanism.

SE-422	SE-417	PRT-11

PH250
GP2S40K
PAPER JAM SENS
GP2S40K

CN250

1 A 1P
4 CA
3 CO 2P
2 E

Q2
2SC1623
R24
33
Q2

IC5 (2/4)
μPC324G2

12V   5V

R37   R42   CN7
10k   33   15P

C14
470p

CN008
15P

CN4   R21
1P   150

5V

R39
22k

6
5   7
IC5 (4/4)
μPC324G2

R34
33

C15
470p

11P

TP131
LPP_JAM

IC107
M62354FP-T1

DO LD CLK AO6 AO5 AO4 AO3 GND VSS
VCC VDD AO1 AO2
D0 LD CLK D1 A01 A02 GND

TP155 TP154 TP153
D1   CLK   LD

IC112

9
10
11

TP125
P.P. JAM

L115   R137 33

5V

R281
10k

13   14   33
12   IC6 (4/4)
       μPC324G2

C126
470p

6) Ribbon code sensor (LED)

Route : SE-423 to SE-425 to SE-417 to PRT-11

TP : PRT-11 board TP128(LRBN_CD 0),TP129(LRBN_CD 1)

Function : Luminescence LED of start, end and beginning code detection marks of ribbon distinction sensor.

7) Ribbon code sensor(PHTR)

Route : SE-424 to SE-417 to PRT-11

TP : PRT-11 board TP118(RBN_CD 0),TP121(RBN_CD 1)

Function : Distinction of start, end and beginning code detection marks of ribbon.
(Photo transistor)

Level :

	RBN_CD 0	RBN_CD 1
Ribbon end	H	H
Beginning detection of YELLOW	L	H
Beginning detection of MAGENTA and CYAN	H	L
Others	L	L
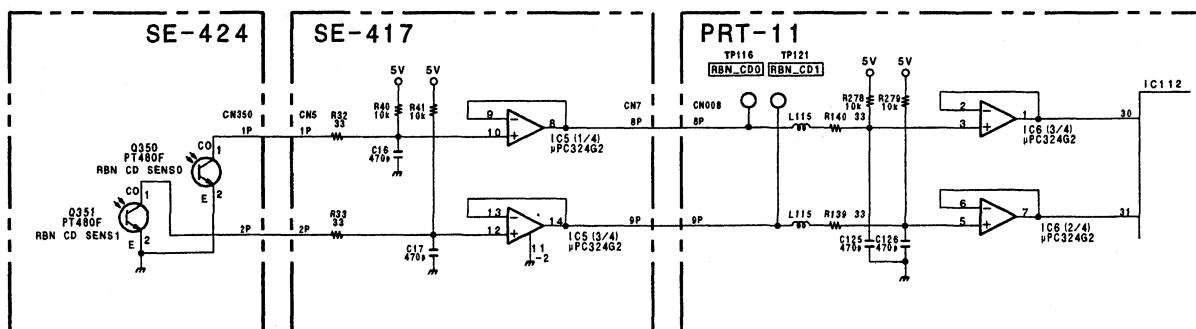
8) Bar code sensor

Route : SE-425 to SE-417 to PRT-11

TP : PRT-11 board TP124

Function : Detection of bar code ring that is distinguished the kind of ribbons.

Level : Rectangle waveform output
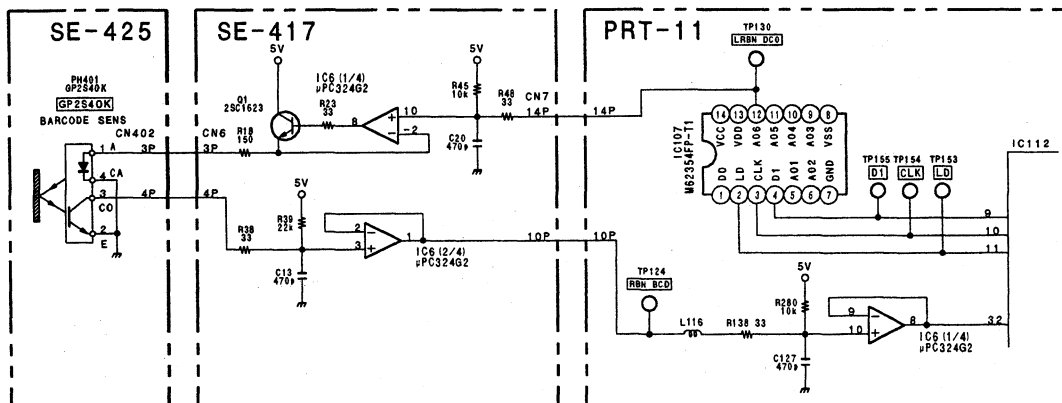
9) Paper size sensor

Route	: SE-426 to SE-418 to PRT-11
TP	: PRT-11 board TP115
Function	: Distinction whether paper set is print paper or post card or not.
Level	: H Post card, paper for laminate
	L Standard, paper for sticker

10) Paper sensor

Route	: SE-426 to SE-418 to PRT-11
TP	: PRT-11 board TP117
Function	: Distinction whether paper supply tray or the print paper is set or not.
Level	: H The print paper is set, or the paper supply tray is set and there is not print paper.
	L There is not print paper, the paper supply tray is not set.

[Schematic diagram: SE-426 | SE-418 | PRT-11]

SE-426: PH450 RP1-5100 PAPER SIZE SENS CN450; PH451 RP1-352 PAPER SENS
SE-418: CN104, R106 150, R107 150, Q101 2SB798-T1DK, R122 10k, R123 1k, Q102 DTC124, CN105 11P, R119 10k, R112 33, C105 470p, IC101 (5/8), R120 10k, R113 33, C106 470p, IC101 (6/8)
PRT-11: CN009 11P, TP123 SENSOR_CHECK, IC103 (7/8), IC112; TP115 PPSZ, R117 10k, L109, R127 33, C118 470p, IC102 (6/8), IC115; TP117 PAPER, R119 10k, L108, R126 33, C120 470p, IC102 (7/8)

11) Paper supply timing sensor

Route	: SE-427 to SE-418 to PRT-11
TP	: PRT-11 board TP101
Function	: Distinction whether print paper is correctly supplied or not.
	Distinction whether print paper is jammed at paper supply entrance during the stand-by mode.
Level	: H There is a print paper at paper supply entrance.
	L There is not print paper at paper supply entrance.

[Schematic diagram: SE-427 | SE-418 | PRT-11]

SE-427: PH501 RP1-5100 LOAD TMG SENS CN504
SE-418: CN101, R102 150, Q101 2SB798-T1DK, R127 10k, R123 1k, Q102 DTC124, CN105 11P, R116 10k, R108 33, C102 470p, IC101 (1/8)
PRT-11: CN009 11P, TP123 SENSOR_CHECK, IC103 (7/8), IC112; TP101 LOAD_TMG, R106 10k, L114, R132 33, C102 470p, IC102 (1/8)
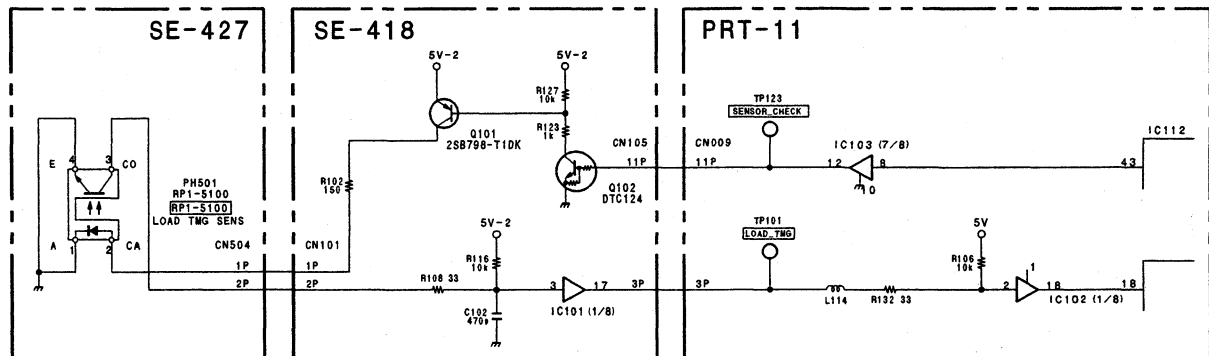
12) Eject paper timing sensor

    Route   : SE-428 to SE-418 to PRT-11

    TP   : PRT-11 board TP104

    Function : Mechanical timing distinction of during eject paper operation

                Distinction whether the print paper is jammed at eject paper exit or not.

    Level   : H There is a print paper at delivery paper exit.

                L There is not print paper at delivery paper exit.
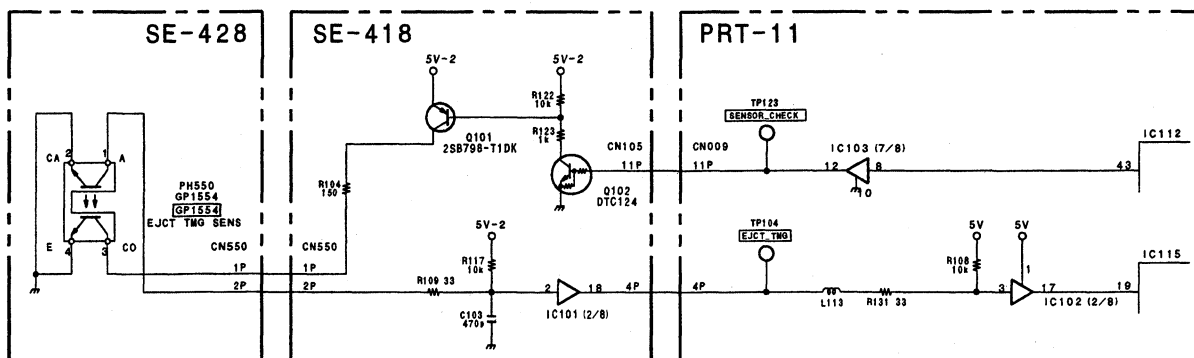
13) Tray position sensor

    Route   : SE-429 to SE-418 to PRT-11

    TP   : PRT-11 board TP107(TRAY_POS 0),TP109(TRAY_POS 1)

    Function : Distinction of paper supply arm and eject paper arm positions

    Level   :

	TRAY_POS 0	TRAY_POS 1
Others	H	H
Paper supply position	L	H
Eject paper position	H	L
Home position	L	L
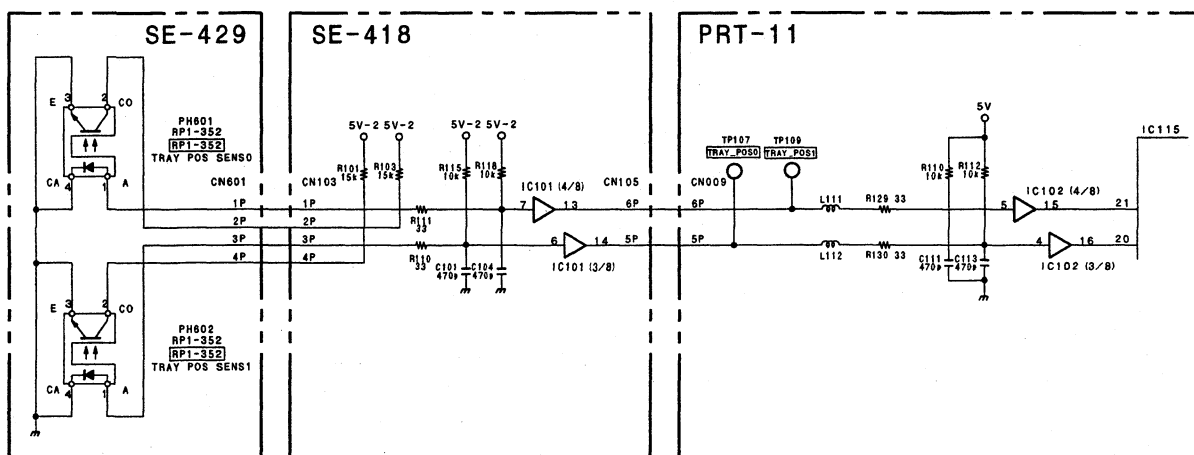
14) Paper ejector sensor

Route : PRT-11

TP : PRT-11 board TP120

Function : Distinction whether the paper ejector(option) is inserted or not.

Level : H The paper ejector is not set.

L The paper ejector is set.
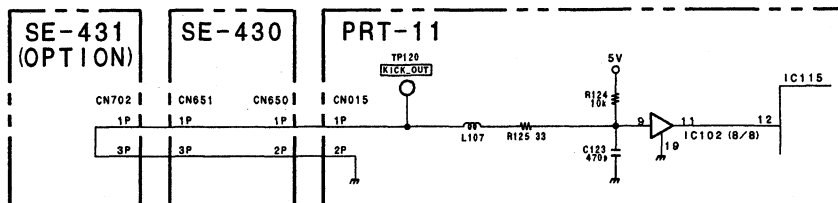
15) Ribbon FG sensor

Route : SE-417 to PRT-11

TP : PRT-11 board TP116

Function : Rotation number of ribbon take-up side is detected.

Level : Rectangle waveform output
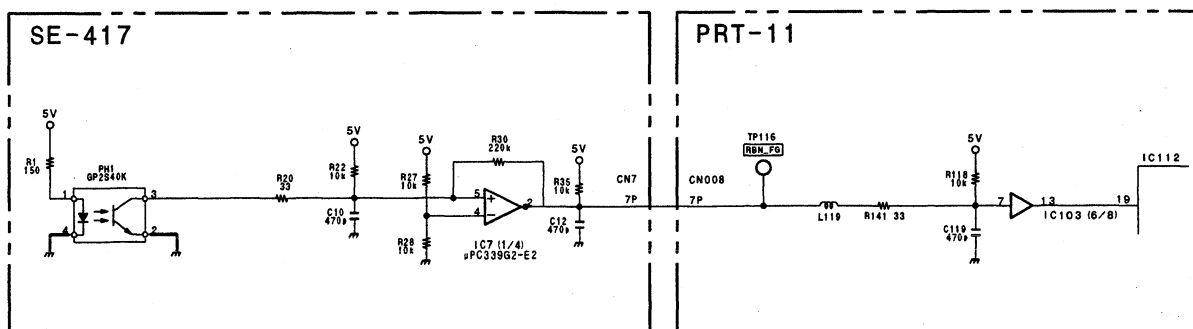
16) Loading paper FG sensor

Route : SE-418 to PRT-11

TP : PRT-11 board TP112

Function : Detection of print paper sending quantity between position paper supply timing
sensor and platen chuck and sampling FG of bar code ring.

Level : Rectangle waveform output
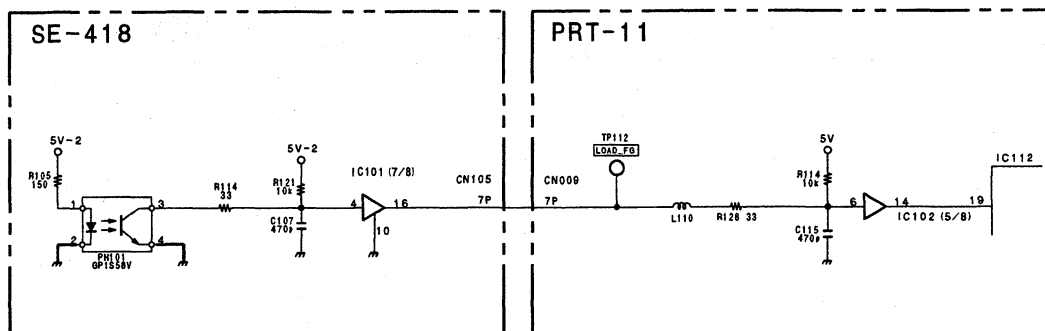
4-4-7. Paper ejector motor drive circuit

The motor of paper ejector is driven by control signal from pin 44 of IC112 (CPU).
It is only driven at eject paper time.

Q107
2SB962Z-T2P

12V

R173
220

C144
100
16V

~2

5V

C159
0.1

TP186
KICK MTR

R172
1k

R178
4.7k

IC113 (1/6)
SN74HC14ANS-E05

IC112 44PIN

R163
15

R164
15

R1000
15

CN015 3PIN

CN015 4PIN

Q111
2SC1623-T1-L5L6

TO KICK MOTOR

~2
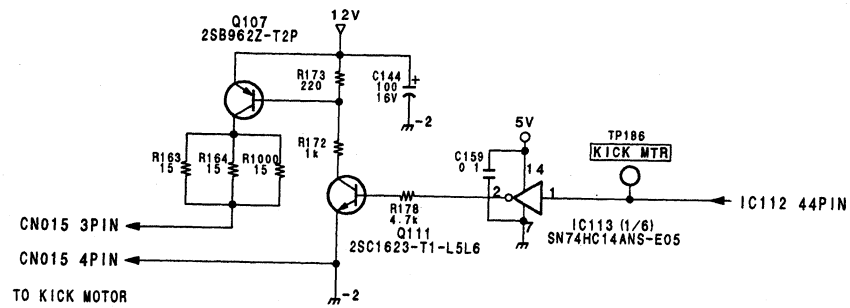
Head control block

The head control block adds the signal process that are various corrections to everyone line parallel print data from FMY-21 board and sends it to thermal head to print.
The head control block is composed following five sections.

- γ ROM that corrects γ correction to the parallel print data from FMY-21 board.
- Image processing IC(Picture Quality Control IC) that processes pattern recognition interpolation, edge reinforcement, heat accumulation correction.
- Head driving IC that converts parallel data with PWM and sends print data to the thermal head.
- Line number correction IC(Voltage drop control IC) that corrects voltage drop by common resistor of the thermal head.
- The head voltage correction circuit

The print data is received from FMY-21 board as parallel data and corrected γ correction. Various signal processing are added by PQC IC. After that, PWM modulation is performed by head driving IC and is sent the print data to the thermal head.
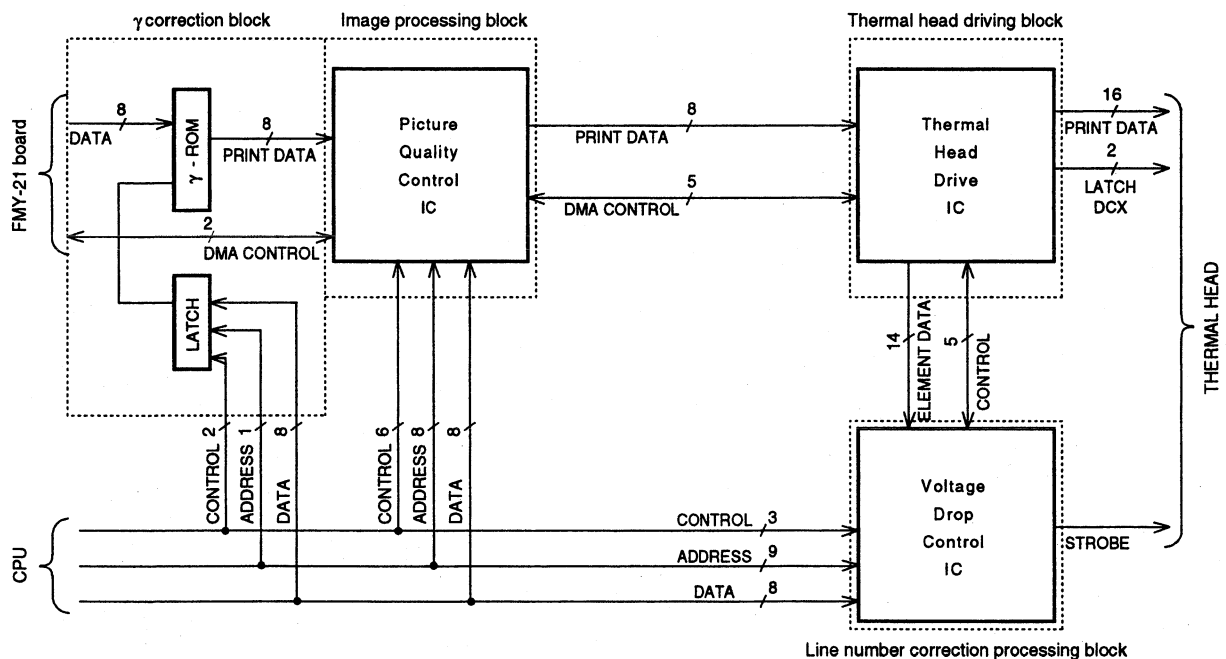
[Each Block]

γ Correction circuit

The print data from FMY-21 board is γ corrected by the data conversion table of γ ROM. The address of γ ROM is allotted as follows, YMC each color switching at two bits, temperature compensation of thermal head at four bits, kinds and sending of the ribbon at four bits. γ data is switched according to the switch signal from CPU(IC112).

PQC IC

Edge reinforcement process

To improve definition of the image, edge reinforcement is performed by using digital filter of horizontal and vertical.

Heat accumulation correction processing

Dull of rising and dull cutting from bad head temperature response are corrected by the digital filter.

Head driving IC

PWM modulation processing

Eight bits parallel data is modulated with PWM and is converted serial print data.

Separation print processing

If the print dot area of low density image portion becomes small, clearance between print lines are appeared. As this countermeasure, one step gradation is divided by four and prints.

Line number correction IC

If exothermic resistor element connected the thermal head is increased, composition resistor of element becomes small. Voltage drop by common resistor of harness etc. can not be disregard. The print density becomes low. As this countermeasure, the time turning on electricity to the head element is controlled, print density is corrected.

Head voltage correction

Head voltage can be increased or decreased by changing VCONT signal. Following corrections are performed by using A/D port output of CPU(IC112). V CONT signal is controlled digitally by software.

Correction by sending pitch

When printing with same head voltage, the sending pitch is narrower, print is higher density. Each sending of usual horizontal print(FULL, four separation, sixteen separation) and vertical print(two separation, IPP) are added the offset.

Correction of thermal head temperature.

When printing with same head voltage, there is difference between print density by high or low of head temperature. Therefore, the head voltage is increased or decreased by head temperature just before printing.

[Input and output timing]

nPRINTING signal and nHEAD_ACTIVE_IN signal, these are enable signal of thermal head. When both these signals are L, the thermal head becomes print possible mode. NHEAD_ACTIVE_IN(P) signal is in addition to enable signal of IC(IC207,208,210). When this signal is "L", the IC is print possible mode. In this mode, rising edge of PRINT_PULSE_IN signal is inputted to the PQC IC(IC207), nFMY_DREQ signal that indicates print data receiving able condition that is outputted to the FMY-21 board, DMA transmission of first data is received. If the rising edge of next PRINT_PULSE_IN is inputted to the PQC IC, nHEAD_ACTIVE_P and nPRINT_PULSE_P signal are outputted to the next stage head drive IC(IC208),the first line data is processed the image, nPRINT_DREQ signal from next stage head drive IC is waited for DMA transmission. The head driving IC(IC208) received the PRINT_PULSE_P signal from PQC IC(IC207) and outputted nPRINT_DREQ signal. After that, eight bits print data of one line separation DMA transmission with synchronized PRINT_DCK from PQC IC is received.

Next PRINT_PULSE_P signal is inputted, therefore, as serial data of eight port, shift clock (HEAD_CK),data latch output(HEAD_LATCH) and strobe output(HEAD_STRB) are also transmitted to the thermal head. Parallel with DMA transmission of second line data is also received.

As described above, the first line data is synchronized to second PRINT_PULSE_IN signal and transmitted to head driving IC. It is transmitted to the thermal head with synchronized third PRINT_PULSE_IN signal. The PRINT_PULSE_IN signal is inputted to PQC IC with two more than truly print line number.
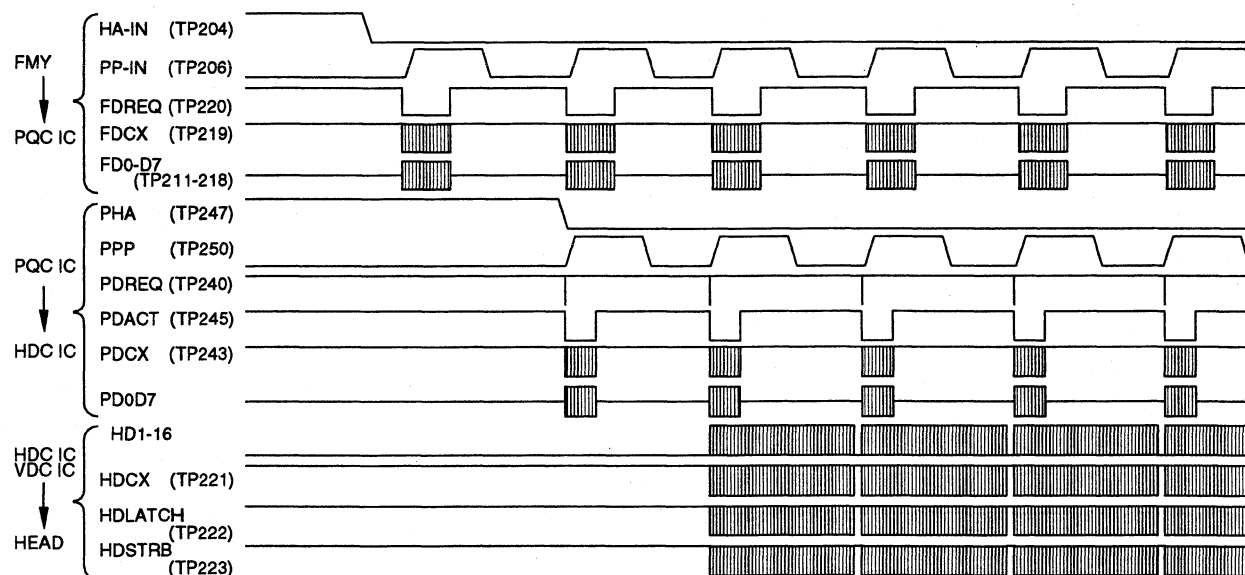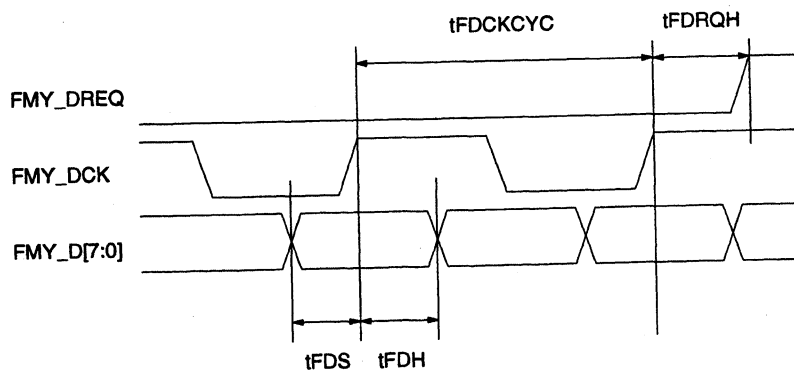
Input and output timing from FMY-21 to PQC IC

Item	Code address	MIN	MAX	Unit
FMY DCK cycle time	tFDCKCYC	400	-	ns
FMY D data setup time	tFDS	15	-	ns
FMY D data hold time	tFDH	15	-	ns
nFMY DREQ LOW TO HIGH	tFDRQH	20	45	ns
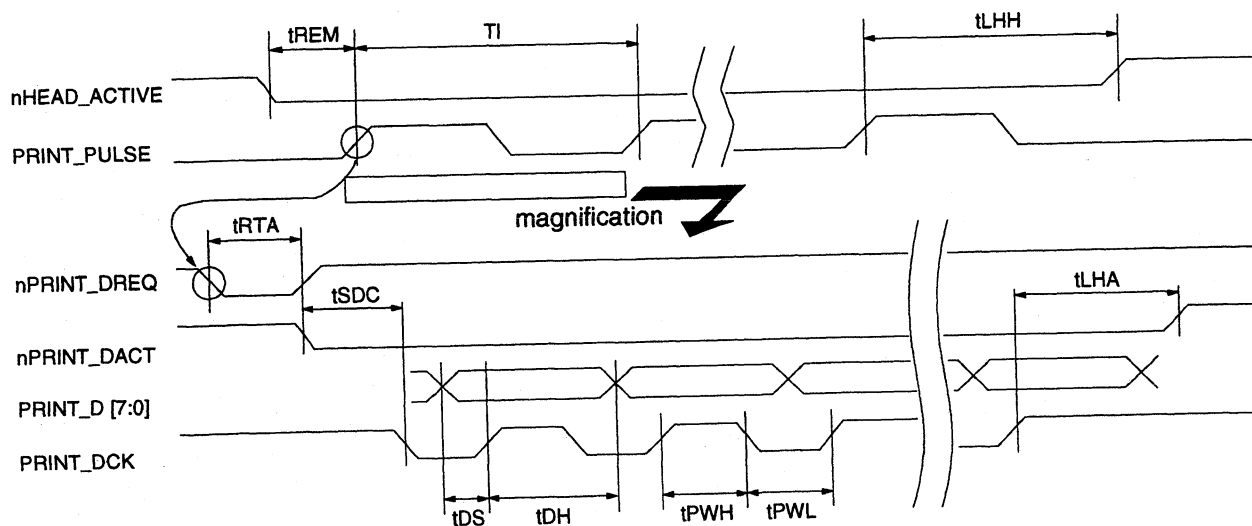
Input and output timing from PQC IC to HDC IC

Item	Code address	MIN	MAX	Unit
nHA ↓ to PP ↑	t REM	10	-	ns
PP ↑ to nHA ↑	t LHH	5.48	-	ns
nDREQ ↓ to nDACK ↓	t RTA	10	-	ns
nDACK ↓ to DCK input	t SDC	0	-	ns
Data setup time	t DS	10	-	ns
Data hold time	t DH	10	-	ns
DCK high level width	t PWH	200	-	ns
DCK low level width	t PWL	200	-	ns
DCK ↑ to nDACK ↑	t LHA	1.8	-	μs

UP-2800 (E)
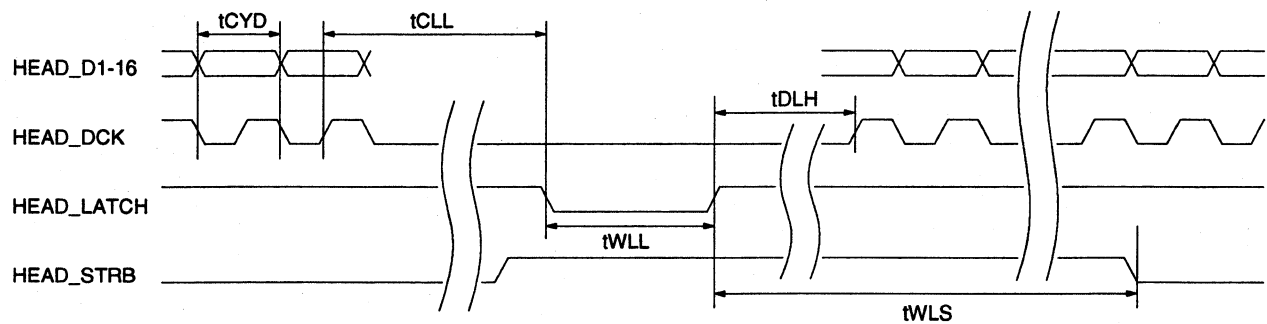
Output timing of thermal head

Item	Code address	MIN	Unit
DATA 1 TO 8 HED_CLK cycle time	t CYD	150.87	ns
nHEDLATCH low level width	t WLL	452.61	ns
nHED LATCH ↑ to HED_CK ↑	t DLH	528.04	ns
HED_CK ↑ to nHED_LATCH ↓	t CLL	678.91	ns
nHED_LATCH ↑ to nHED_STRB ↓	t WLS	2.26	µs

SECTION 5
MECHANICAL DESCRIPTION

5-1. MECHANICAL OPERATION DESCRIPTION

This model is the dye transfer sublimation thermal printer that prints A6 size print paper (width direction). This is platen chuck method.
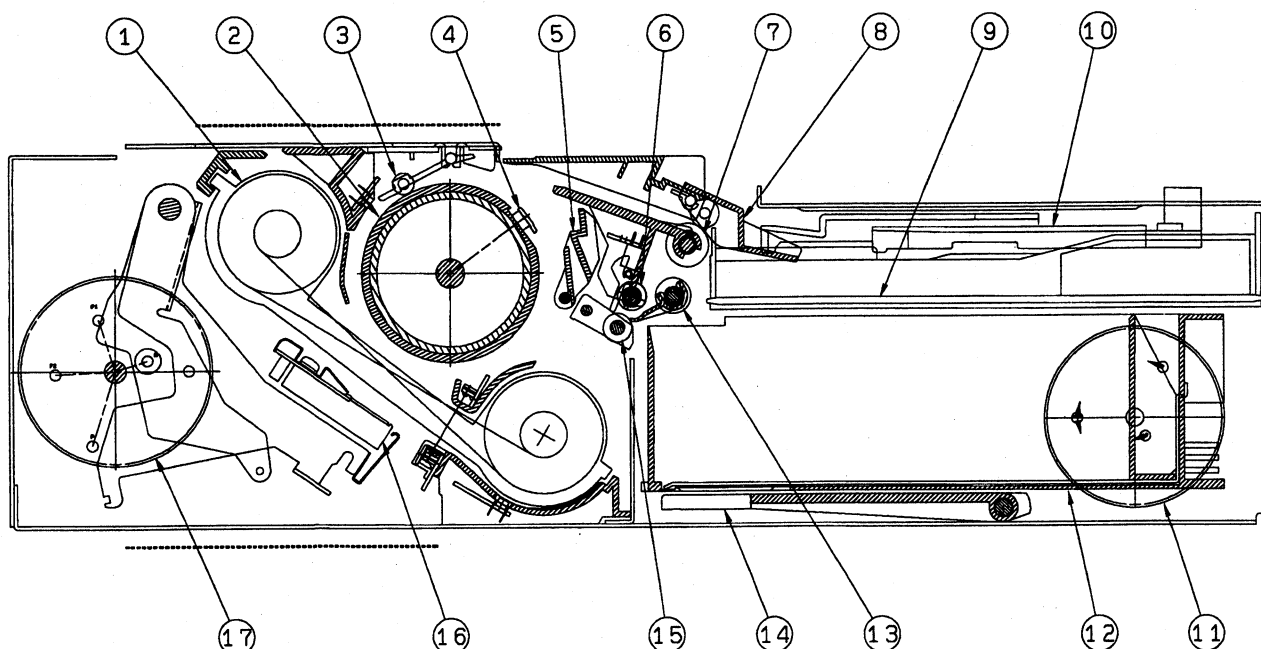
Fig. 5-1.

This model has little big size ribbon cartridge and paper supply tray because this model correspond to 200 images by color standard print paper and ribbon.

The top cover has the lid for a jamming. (The dot line portion of platen upper) Replacement of the thermal head is performed from bottom side of the unit. The bottom side has the lid.(The dot line portion of thermal head lower.)

There are postcard size paper supply tray and paper injector(one piece injection unit) as option.

Major parts layout
① Ribbon cartridge
② Platen
③ Paper hold roller
④ Chuck
⑤ Paper lead flap
⑥ Paper supply roller
⑦ Paper eject roller
⑧ Paper eject flap
⑨ Paper eject tray
⑩ Paper eject arm
⑪ Tray motor cam
⑫ Paper supply tray
⑬ Pick up roller
⑭ Paper supply arm
⑮ Separation roller
⑯ Thermal head
⑰ System cam
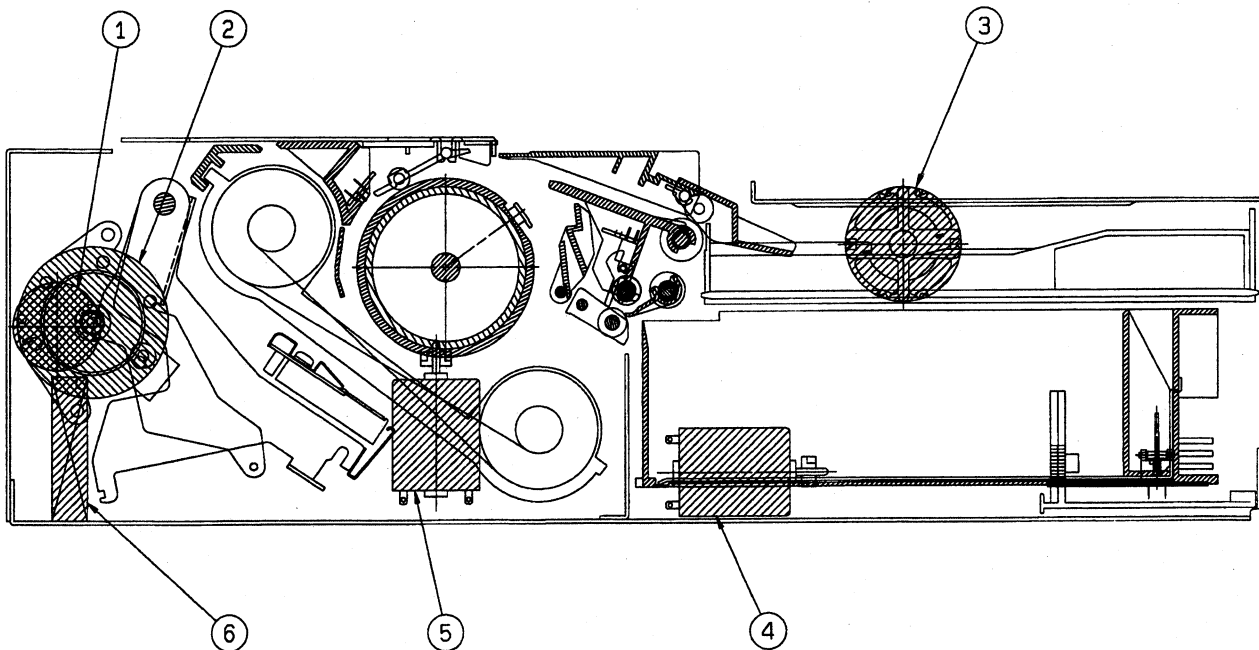
Fig. 5-2.

This unit has five drive motors. There is a fan motor for cooling the thermal head.
There are two fan motor for cooling the switching regulator at the chassis.

① Head motor (DC motor)(correctly rotation /reversely rotation)
- Head up/down drive
- BC link stop
- Platen chuck link drive

② Platen motor (stepping motor) (correctly rotation /reversely rotation)
- Platen drive
- Chuck open and shut (linked with rotation of platen)

③ Paper supply motor (DC motor) (correctly rotation /reversely rotation)
- Pick up roller drive
- Paper supply roller /separation roller drive
- paper eject roller drive
- BC gear drive

④ Tray motor (DC motor) (correctly rotation /reversely rotation)
- Separation roller position move
- Paper lead flap drive
- Paper supply arm drive
- Paper eject arm drive

⑤ Ribbon motor (DC motor) (correctly rotation only)
- Ribbon rewinding

⑥ Fan motor(DC motor) (correctly rotation only, for letting the air)
- Thermal head cooling when printing and over heating.
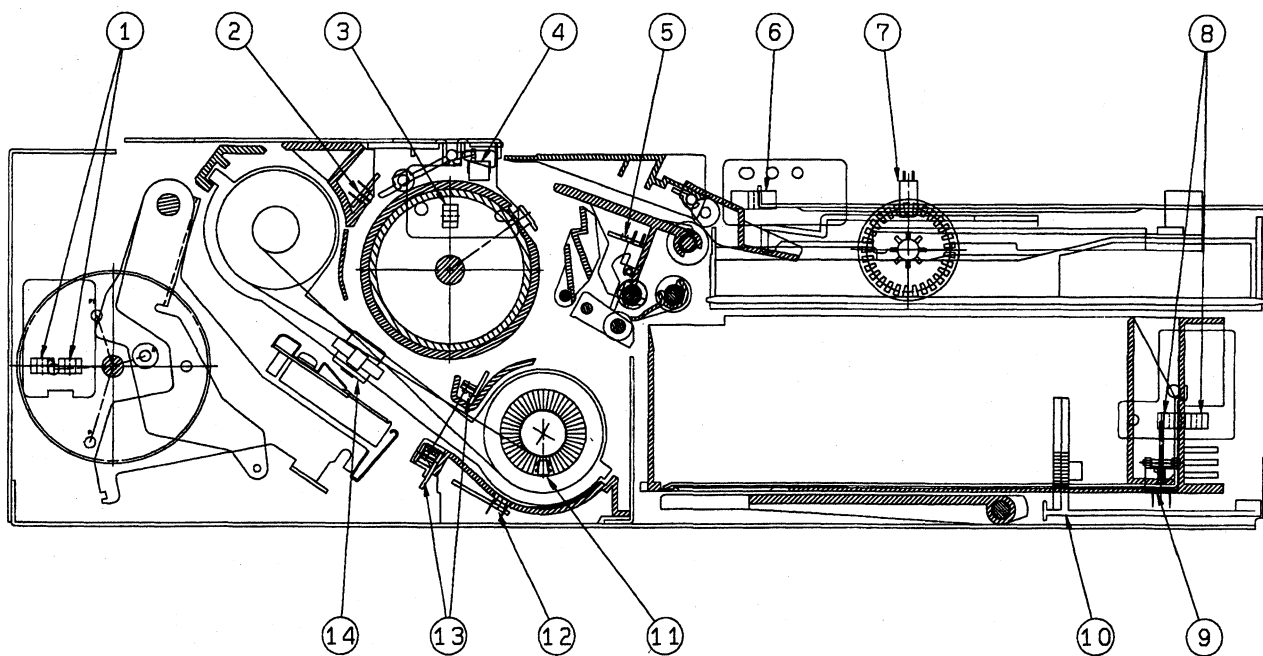
Fig. 5-3.

The sensor names and methods are as follows.

No	Name	type	method
1	Head position sensor	Transparency ×2 Photo interrupter	Detection of head position
2	Paper jamming sensor	Reflection Photo interrupter	Detection of paper jamming
3	Platen position sensor	Transparency Photo interrupter	Detection of platen home position
4	Platen cover sensor	Microswitch	Open and shut judge of cover
5	Paper edge sensor	Transparency Photo interrupter with arm	Detection of paper edge
6	Paper eject timing sensor	Transparency Photo interrupter	Detection of delivery paper miss
7	Paper supply FG sensor	Transparency Photo interrupter	Detection of paper sending quantity
8	Tray position sensor	Transparency ×2 Photo interrupter	Detection of tray motor cam position
9	Tray size sensor	Transparency Photo interrupter with arm	Detection of tray size
10	Paper yes or no sensor	Transparency Arm and photo interrupter	Yes or no judge of paper
11	Ribbon FG sensor	Reflection Photo interrupter	Judge of ribbon rewinding
12	Bar code sensor	Reflection Photo interrupter	Type judge of ribbon cartridge
13	Ribbon code sensor	Transparency ×2 LED and photo transistor	beginning detection of ribbon each color
14	Ribbon cartridge sensor	Microswitch Push catch one type	yes or no judge of ribbon cartridge

Table 5-1.

5-2. PRINTING OPERATION DESCRIPTION

Printing operation is switched at four position by system cam and is performed to assemble three positions by tray motor cam.

5-2-1. Position change during printing operation

Position		Operation content
System cam	Tray motor cam	
Home	Home	① Ribbon cartridge, paper yes or no judge ② Head preheat and fan motor rotation (when there is ribbon or paper) ☆ Print operation start
Paper supply	Home Paper supply Paper supply Paper supply Paper supply Home	① Ribbon type judge, Assembly judge of ribbon and paper ② Beginning detection of ribbon (yellow) ③ Paper supply ④ Paper chucks the platen. ⑤ Jamming judge ⑥ Positioning of paper print start
Print	Home	Yellow print
Fast forward	Home	Beginning detection of ribbon (magenta) Positioning of paper print
Print	Home	Magenta print
Fast forward	Home	Beginning detection of ribbon (cyan) Positioning of paper print
Print	Home	Cyan print
Fast forward	Home	To platen eject paper start position (correctly rotation)
Home	Home Home Home Paper eject Home	① Platen is rotated reversely. Paper eject start ② Platen Chuck is released. ③ Paper is ejected on the paper eject base. ④ Paper is fallen on the paper eject tray. ☆ Print operation is finished.

Table 5-2.

5-2-2. Home position

PAPER
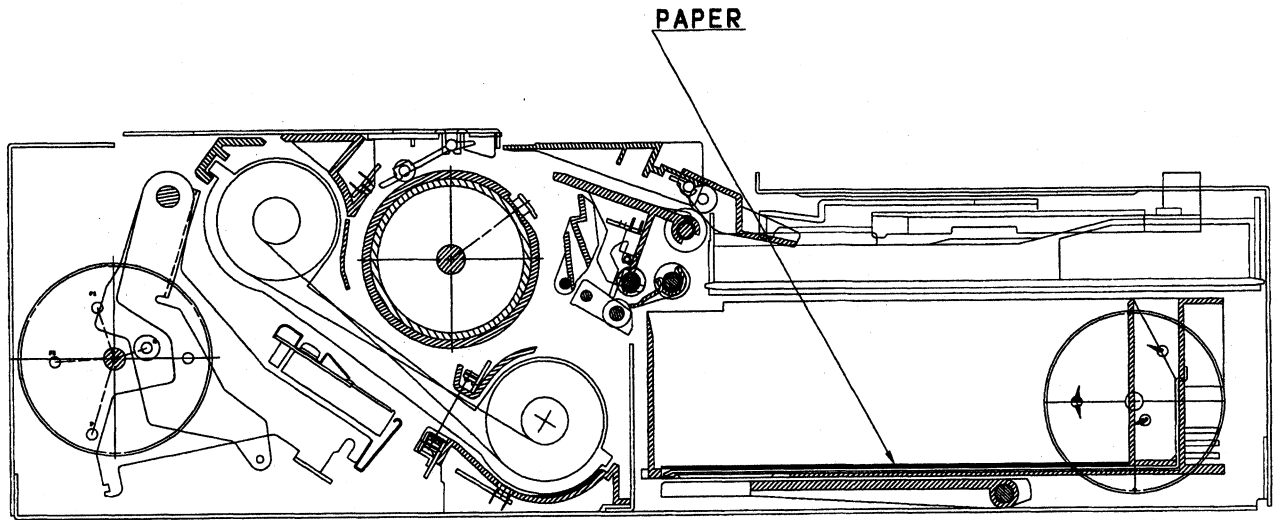
Fig. 5-4.

After power switch is turned ON,
- When power switch is turned ON, if the system cam or the tray motor cam is not stayed at the home position, each cam will be returned to the home position.
- When power switch is turned ON, if the platen is not the home position, the platen will be returned to the home position with only inserted the paper and ribbon.

The system cam, the tray cam and the platen are at the home position, mechanism is not operated.

Yes or no judge of the ribbon cartridge and the print paper is performed, if there is each of them, head preheating and fan motor rotation are performed.

5-2-3. Delivery paper position
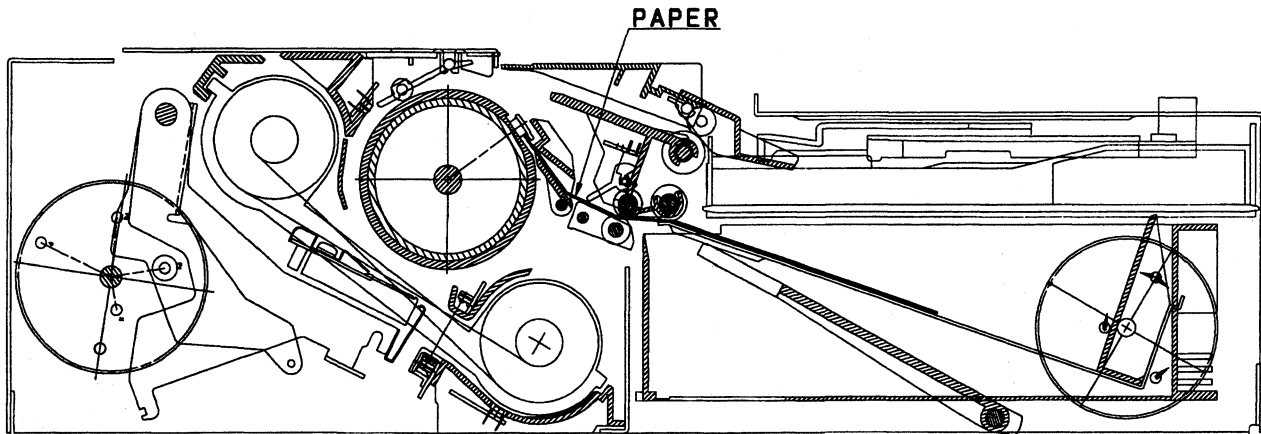
PAPER

Fig. 5-5.

When the print button is pressed, the unit becomes this position. Ribbon bar code ring is red, the type of ribbon is judged. At the same time, judge of paper supply tray size is performed, combination of ribbon and paper is judged.

Reading of bar code ring is performed only when the system cam is stayed at paper supply position. The paper supply motor is rotated and rotated bar code ring via paper supply block and BC arm. The bar code is read by bar code sensor. If the platen is not the home position, return operation to the home position of the platen is performed.

Next, beginning detection of yellow ribbon is performed. The supply paper motor is rotated and the paper is conveyed to the chuck position. After that, while rotating the platen, paper is chucked. At this time, tray motor cam is set to paper supply position, paper supply arm is lifted, the paper is pressed to the pick up roller. At the same time, separation roller is pressed to the paper supply roller via TM link and supplied to the paper. This separation method is used.

The paper supply FG sensor is counted from when the paper passes through the paper edge sensor, timing of platen rotation start is measured.

When the platen is rotated about 55°, the paper is chucked perfectly.(Actually, the chuck is closed gradually.) At this time, paper conveyance quantity by paper supply roller is little much than paper conveyance quantity by platen.

Next, when the platen is rotated about 120°, the paper jamming sensor condition is surveyed, if the paper is not reached, it is judged chuck miss, printing operation is stopped. In this case, open the lid for a jamming and take from the paper.

If the chuck is correctly performed, print start position of paper is detected.

Note:

- The paper supply tray becomes depth because this model corresponds to 200 images. Therefore paper setting is little difficulty. Specially, if the paper is set with it's folded, paper is not supplied. The symptom of this condition, confirm the paper condition in the paper supply tray.
- When paper supply miss is occurred, paper supply arm is down once and paper supply operation is performed again.(until two times) This is not trouble.
- After paper is supplied, paper supply motor is reversely rotated a little in order to return the paper in the paper supply tray. This is not trouble.

5-2-4. Printing position
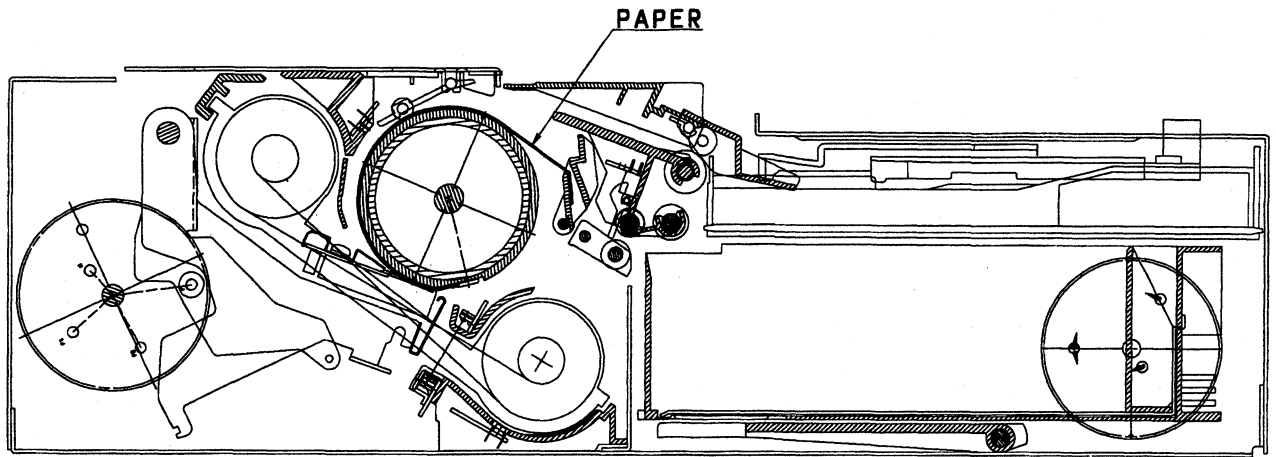
Fig. 5-6.

Print is started from when the platen is rotated about 250°. The system cam is rotated, the thermal head is pressed to the platen and the ribbon motor and platen are rotated. The figure is indicated the print start condition of yellow. The rear edge of paper is reminded at paper lead flap.

5-2-5. Fast forward position
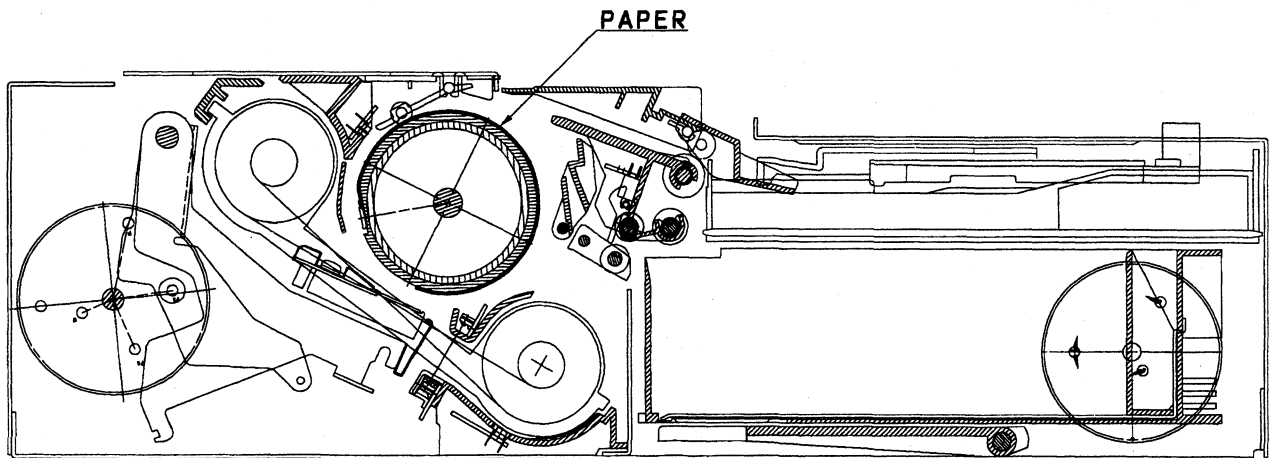
Fig. 5-7.

Each color printing is ended, the thermal head is separated and fast forward is performed.

Platen .... positioning of paper, positioning of delivery paper start

Ribbon .... beginning detection of magenta and cyan

5-2-6. Delivery paper position (Almost same as home position)
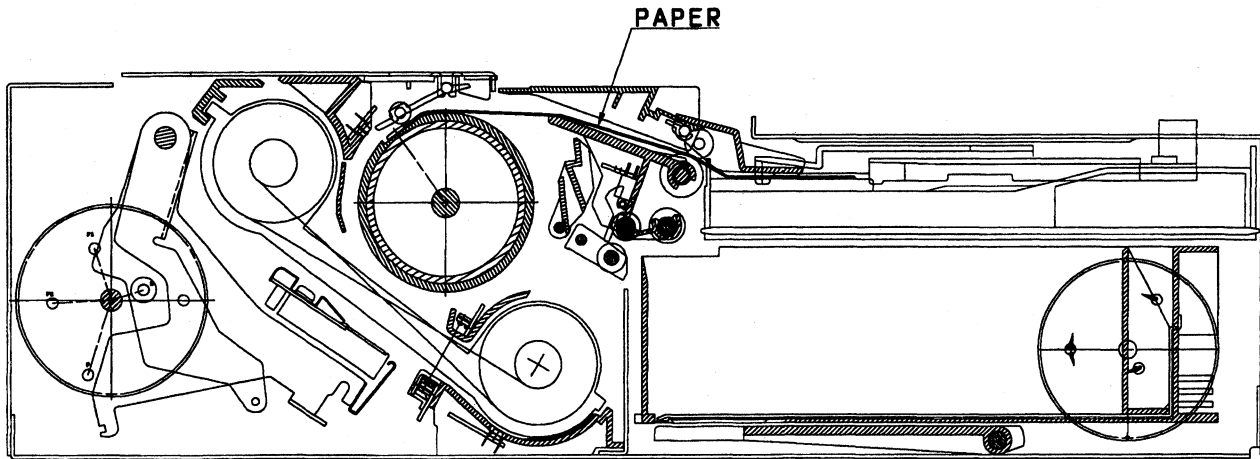
Fig. 5-8.

When the paper is reached at eject start position, the system cam is returned to the home position, the platen is rotated reversely and is ejected the paper. At the same time, eject paper roller is rotated by rotating the paper supply motor. The chuck is opened gradually according to the rotation of the platen, the paper is conveyed to the eject paper base. Lastly, tray motor cam is positioned at eject paper position, eject paper arm is moved and the paper is fallen on the eject paper tray.

5-3. PLATEN DRIVE SECTION

flange B 3-609-335-01
tooth number 100, pitch
circle 47.75 mmdia

120TN15 belt 3-609-350-01

platen gear pulley 3-609-348-01
module 0.3 tooth number 95 pitch
circle 28.5 mmdia tooth number
22 pitch circle 10.5 mm dia

platen motor (stepping motor)
1-698-555-21

160TN15 belt
3-609-479-01

platen pully 3-609-347-01
tooth number 88 pitch circle
42.02 mm dia
tooth number 25 pitch circle
11.94 mm dia

platen motor gear
(one body with motor)
module 0.3 tooth number
20 pitch circle 6mm dia

platen idler 3-609-349-01

Fig. 5-9.

The platen motor performs platen drive and open and shut of chuck.

In platen drive, module of the gear is used 0.3 mm and the belt is used TN15 type (belt pitch : 1.5 mm) to prevent the unevenness print. Specially, two belts are used, therefore unevenness print will not be disappeared. If the tooth of belt is jumped, the belt may be damaged, therefore replace the belt new one.

5-3-1. Platen drive section gear ratio

flange B

$$\frac{95}{20} \times \frac{88}{22} \times \frac{100}{25} = 76$$

platen motor gear   platen gear pulley   platen pulley
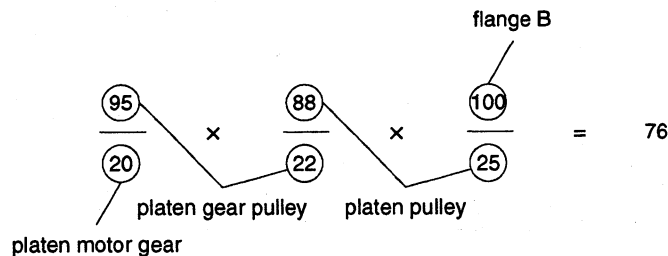
5-3-2. Unevenness print

If the gear or pulley is damaged, a vertical line is periodically appeared on the print. In this case, replace it to applicable pulley or gear as follows.

- Platen motor gear .... pitch 2.1 mm
- Platen gear pulley .... pitch 9.8 mm
- Platen pulley .... pitch 39.3 mm
- Flange B .... every time same place

5-4. PAPER SUPPLY AND EJECT DRIVE SECTION

PU gear pulley
3-609-399-01

72TN15 belt
3-686-322-01

supply paper motr RF-500TB
1-698-323-11

paper eject roller 3-609-372-01
separation gear 3-609-389-01
P supply idler gear
3-609-388-02

paper supply roller
3-609-370-02

paper supply gear
3-609-700-01

paper eject

paper supply

FG fin
3-173-567-02
paper supply motor pully
3-609-400-02

PU B gear
3-609-398-01

PU A gear
3-609-387-02

P limiter gear ass'y
A-8278-640-A
paper separation roller 3-609-371-01
separation gear 3-609-389-01
pick up roller 3-609-369-02
pick up gear 3-609-386-02

Paper supply and eject drive section is composed by paper supply motor block ass'y and paper supply block ass'y.

The pick up roller sends the paper in the paper supply tray. In this stage, some papers are conveyed. Next, when the papers are sent to between paper supply roller and separation roller, the most upper paper is only conveyed to the platen block by paper supply roller. The papers later than second paper are not advanced in this position. This is cause that the rotation of paper supply motor is directly transmitted until paper supply motor but, it is transmitted to the separation roller via P limiter gear ass'y.

When only the paper is supplied, the separation roller is pressed to the paper supply roller. When there is one paper or nothing, gear B and A is slipped and separation roller is rotated correctly since transmission drive power from paper supply roller to separation roller is stronger than drive power from P limiter gear(torque limiter). But when more than two papers are put between paper supply roller and separation roller, gears A and B of P limiter gear ass'y are rotated same direction and the separation roller is rotated reversely since direct transmission drive power from paper supply roller to separation roller becomes weak because the paper is slipped, the drive power from P limiter gear becomes bigger. Such as this, when one piece, the paper is conveyed since the separation roller is rotated correctly. When more than two pieces, most upper paper is conveyed only and later two pieces are returned since the separation roller is rotated reversely.

Lastly, the printed paper is conveyed to the paper eject section by the paper eject roller.

SECTION 6
TROUBLE SHOOTING

6-1. VIDEO (IMAGE) RELATION TROUBLE

[flow of video signal]
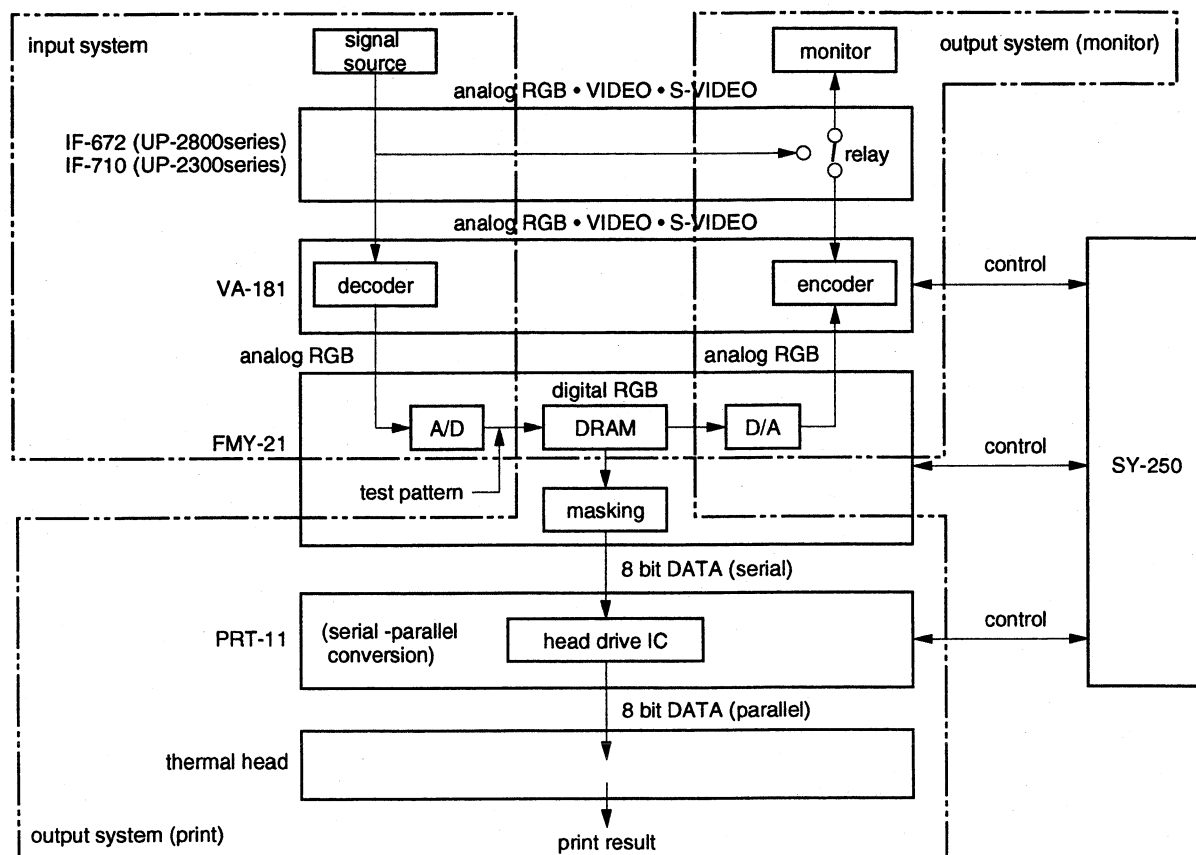
The block of printer is divided into three sections in order to solve the trouble related to the print and the video of monitor out.

As FMY-21 board DRAM is center,

Input system : video signal input to IF board to VA-181 board to FMY-21 board A/D to DRAM

Output system(monitor): FMY-21 board DRAM to D/A to VA-181 board to IF board to monitor

Output system(print) : FMY-21 board DRAM to masking to PRT-11 board to head

Make sure which system has the trouble.
1) The print is abnormal. The monitor output is normal.
   There may be trouble at the output system(print).
2) Both the print and the monitor output are abnormal.
   Make sure the print and the monitor output when the outer signal is inputted.
   Make sure the print and the monitor output when the test pattern is written in the service man mode.
   If the later is normal, there may be trouble at the input system.
3) The print is normal. The monitor output is abnormal.
   There may be trouble at output system(monitor).

Input system relation point

- Is the analog video signal from VA-181 board outputted to the FMY-21 board correctly?
  (TP401, 403, 404) waveform 1, 2, 3
- Make sure digital output of A/D converter (IC1001, 1002, 1003) on the FMY-21 board.
  (TP4165, 4157, to 4164, 4149)(triggered by SWD_HD) waveform 4
- Are SWD_VD (TP2035) and SWD_HD (TP4005) on the FMY-21 board inputted correctly?
  waveform 5, 6

Output system(monitor) relation point

- Make sure the digital video signal output from DRAM controller on the FMY-21 board.
  (TP4141, 4133 through 4140, 4125)(triggered by SWD HD) waveform 7
- Make sure the analog output of D/A converter(IC1005) on the FMY-21 board.
  (TP1004, 1005, 1006)(triggered by SWD HD) waveform 8, 9, 10
- Make sure the encoder output on the VA-181. (TP802, 803, 804) waveform 11, 12, 13
- Make sure the output from VA-181 to IF board.
  Analog RGB(TP901, 902, 903, 904) waveform 14, 15, 16
  VIDEO(TP907) waveform 17
  S-VIDEO[Y](TP905) waveform 18
  S-VIDEO[C](TP906) waveform 19

Output system(print) relation point

PP IN signal on the PRT-11 board is the signal that is risen by every print 1 line
outputted from CPU on the PRT-11 board. The print data demand signal PDREQ to FMY-21
board is outputted every 1 line (rising down), when receiving the necessary data, the PDREQ
signal is risen.
The print data from FMY-21 board is synchronized the FDCK signal and outputted.
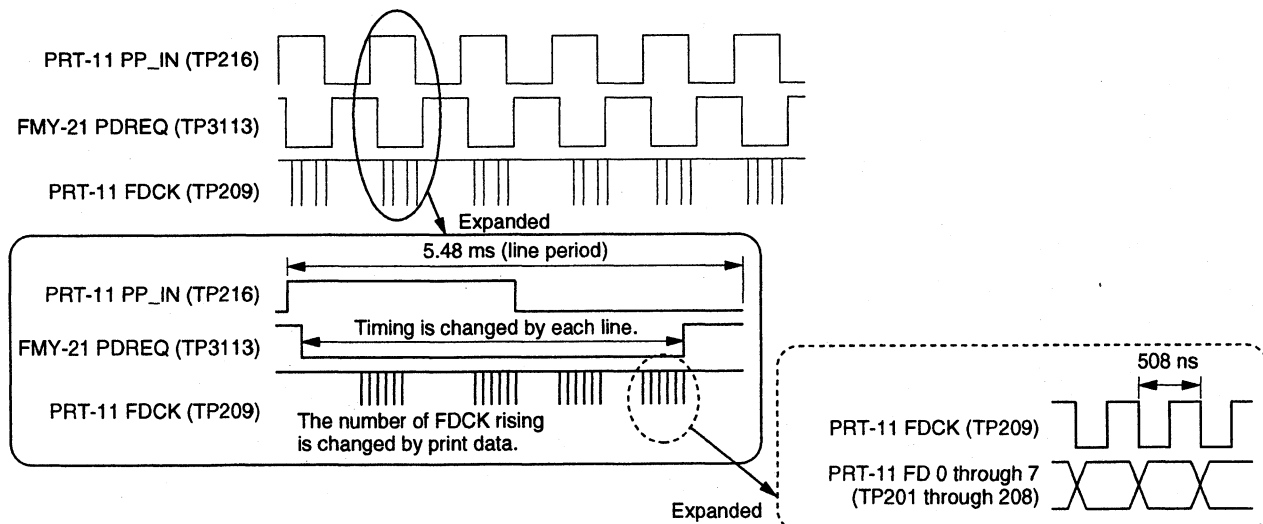
6-2. ERROR INDICATION

If the printer judges error mode , alarm LED is lighted and the message is displayed on the monitor
or liquid crystal. Error messages are indicated as follows.
1. Error display during stand-by mode
2. Error display during print operation

1. Error display during stand-by mode
This is caution display to enter printing operation. Perform a treatment according to the
following messages.

(Refer to NG _CODE 5)

Monitor display	LCD display	Treatment	NG Code
__REMOVE_PARER : COVER___	REMOVE_PARER___ COVER_____	Jamming detection of the paper Open the upper lid and take it off.	e0 40
_____END_OF_RIBBON_____	END_OF_RIBBON___	Ribbon cutting Replace new one.	e0 20
_____INSERT _RIBBON_____	INSERT_RIBBON____	No ribbon Set the ribbon cassette.	e0 10
_____SET _PAPER_____	SET_PAPER_____	No paper Set the papers.	e0 80
INSERT_RIBBON_AND_PAPER_	INSERT_RIBBON____ SET_PAPER_____	No ribbon and paper Set the ribbon cassette and the papers.	e0 18
_____REMOVE_PRINTS_____	REMOVE_PRINTS__	The paper is jammed at eject exit. Take it off.	e0 04
__REMOVE_PARER : TRAY_____	REMOVE_PARER___ TRAY_____	The paper is jammed at paper supply access. Take it off.	e0 02
_____COLSE_COVER_____	CLOSE_COVER_____	Upper lid of the unit is opened.	e0 01

2. Error display during print operation

This is caution display during the print operation. Perform a treatment according to the following messages.

(Refer to NG_CODE 1)

Monitor display	LCD display	Treatment	NG Code
__MECHA_TROUBLE : HEAD__nn	MECHA_TROUBLE_nn HEAD_____	Head position error Make sure the insertion of ribbon. Make sure the jamming.	e1 10-1f
__MECHA_TROUBLE : TRAY__nn	MECHA_TROUBLE_nn TRAY_____	Paper supply tray position error Call the service engineer. (*)	e1 20-2f
_____CHECK_RIBBON_____nn	CHECK_RIBBON___nn	Ribbon error Make sure the ribbon.	e1 30-3f
_MECHA_TROUBLE : PLATEN_nn	MECHA_TROUBLE_nn PLATEN_____	Error when the platen is driven. Make sure the jamming.	e1 40-47
__MECHA_TROUBLE : LOAD__nn	MECHA_TROUBLE_nn LOAD_PAPER_____	Paper supply error Make sure the jamming.	e1 50-57
_MECHA_TROUBLE : EJECT__nn	MECHA_TROUBLE_nn EJECT_PAPER_____	Eject paper error Make sure the jamming.	e1 58-5f
_MECHA_TROUBLE : CHUCK__nn	MECHA_TROUBLE_nn CHUCK_____	Paper chuck error Make sure the jamming.	e1 61
_____PAPER_JAMMING____nn _____PRESS[->]KEY_____	PAPER_JAMMING_nn PRESS > KEY_____	Jamming detection of the paper Make sure the jamming. (Error is released by [>]key.)	e1 62
_____SENSOR_TROUBLE____nn	SENSER_TROUBLEnn	Defective of the sensor Call the service engineer. (*)	e1 70-7f

- Confirmation of jamming is performed at three portions, lid of upper, paper supply access and eject exit.
- Confirmation of ribbon is performed that the ribbon is correct and the ribbon is cut or twined.
- nn is hexadecimal number. (number at lower side of code)
- In case (*), after that, the set is driven in error mode.
  To release the error mode, it is needed to drive in service mode or factory reset. Therefore, users can not be solved.

[Other errors]

Alarm LED is not lighted.

Monitor display	LCD display	Treatment	Code
_____PLEASE_WAIT_____ _____HEAD_IN_COOLING_____	PLEASE_WAIT_____ HEAD_IN_COOLING_	Overheating of the head Wait some time.	
_____PLEASE_WAIT_____ _____SET_IN_COOLING_____	PLEASE_WAIT_____ SET_IN_COOLING__	Overheating of the set Wait some time.	
_____NO _INPUT_____	NO_INPUT_____ _____	There is no input image. Input the image or change the input.	
_____INPUT_MISMATCH_____	INPUT_MISMATCH__	The input signal is mistaken. Input the correct signal.	
_____NO_IMAGE_____	NO_IMAGE_____ _____	There is no memorized image. Execute after the image is inputted.	
_____PLEASE_WAIT_____ ____PRINTING_MEMORY____	PLEASE_WAIT_____ PRINTING_MEMORY_	Key operation to the memory during the print mode. Wait until the print is ended.	
_____PLEASE_WAIT_____ ____RESERVED_MEMORY____	PLEASE_WAIT_____ RESERVED_MEMORY_	Key operation to the memory during print reservation. Wait until the print is ended.	
_____PLEASE_WAIT_____ _____NOW_PRINTING_____	PLEASE_WAIT_____ NOW_PRINTING_____	Prohibited key operation during the print mode. Wait until the print is ended.	
_____HIT_ANY_KEY_____	HIT_ANY_KEY_____ _____	The unit waits user confirmation (e. g. CAP-STOP) Push any key.	

NG command list 1

A way of looking the list: Refer to the displayed NG data.

In case h ' 19 , It becomes HEAD FF2 FF1 TIMEOUT.

NG_CODE1

NG command	NG data	contents of NG	Board/REF	Check item
h' E1	h' 11	HEAD HOME TIMEOUT	SE-420 board/PH201	• Connector is removed.
	h' 12	HEAD PRN FF2 TIMEOUT	SE-420 board/PH202	• Motor / sensor are defective.
	h' 13		SU-36 board	• There is no sensor sensitive by mistaken
	h' 14	HEAD TRAY TIMEOUT		assembling the mechanism.
	h' 15	HEAD FF PRN TIMEOUT		
	h' 16	HEAD HOME FF1 TIMEOUT		
	h' 17	HEAD HOME FF2 TIMEOUT		
	h' 18	HEAD FF HOME TIMEOUT		
	h' 19	HEAD FF2 FF1 TIMEOUT		
	h' 1a			
	h' 1b	HEAD FF1 TIMEOUT		
	h' 21	TRAY HOME LOAD TIMEOUT1	SE-429 board/PH601	• Connector is removed.
	h' 22	TRAY HOME LOAD TIMEOUT2	SE-429 board/PH602	• Motor / sensor are defective.
	h' 23	TRAY HOME OUT TIMEOUT	SU-38 board	• There is no sensor sensitive by mistaken
	h' 24	TRAY OUT HOME TIMEOUT		assembling the mechanism.
	h' 25	TRAY LOAD HOME TIMEOUT		
	h' 26	TRAY LOAD HOME TIMEOUT		
	h' 2a	TRAY PAPER OUT TIMEOUT		
	h' 2b	TRAY PAPER IN TIMEOUT		
	h' 33	RIBBON Y TIMEOUT	SE-423 board/D301, D302	• Connector is removed.
	h' 34	RIBBON MCL TIMEOUT	SE-424 board/Q350, Q351	• Motor / sensor are defective.
				• There is no sensor sensitive by mistaken assembling the mechanism.
	h' 38	BARCODE START ERROR	SE-425 board/PH401	• Connector is removed.
	h' 39	BARCODE BIT ERROR		• Motor / sensor are defective.
				• There is no sensor sensitive by mistaken assembling the mechanism.
	h' 41	PLT HOME TIMEOUT	SE-419 board/PH150	• Connector is removed.
	h' 42	OLT HOME ERROR	PLT_MTR	• Motor / sensor are defective.
				• There is no sensor sensitive by mistaken assembling the mechanism.
	h' 51	LOAD TMG TIMEOUT	SE-427 board/PH501	• Connector is removed.
	h' 52	LOAD TNG FGOUT	SU-39 board	• Motor / sensor are defective.
	h' 53	LOAD PAPER TIMEOUT1		• There is no sensor sensitive by mistaken assembling the mechanism.
	h' 54	LOAD PAPER TIMEOUT2		
	h' 58	EJECT TMG TIMEOUT	SE-428 board/PH550	• Connector is removed. / Part is defective.
				• There is no sensor sensitive by mistaken assembling the mechanism.
	h' 61	CHUCK ERROR	SE-422 board/PH250	• Connector is removed. / Part is defective.
	h' 62	PP JAM ERROR		• There is no sensor sensitive by mistaken assembling the mechanism.

NG command list 2

A way of looking the list: In case h ' 0A = 0000 1010(Refer to HEX code converting as binary code.)

NG sensor is first bit(PLT CV) and third bit(PP SIZE sensor)

NG _CODE2

NG command	NG bit	Contents of NG	Board/REF	Check item
h' E2	bit 6	LOAD_TMG sensor	SE-427 board/PH501	• Connector is removed.
	bit 5	EJCT_TMG sensor	SE-428 board/PH550	• Part is defective.
	bit 4	RBN_CST sensor	Push SW	• The sensor becomes ON by mistaken
	bit 3	PP_SIZE sensor	SE-426 board/PH450	assembling the mechanism.
	bit 2	PAPER sensor	SE-426 board/PH451	
	bit 1	PLT_CV sensor	SE-419 board/S150	
	bit 0	KICK_OUT sensor	SE-430 board	

NG_CODE3

NG command	NG bit	Contents of NG	Board/REF	Check item
h' E4	bit 6	Head thermistor	Thermal head	• Connector is removed.
	bit 5	Head thermistor		• Thermal head
	bit 4	Room thermistor	PRT-11 board TH1	• Part is defective.
	bit 3	Room thermistor		
	bit 2			
	bit 1	EEPROM ERROR ·	SE-417 board/IC1	• Connector is removed.
	bit 0	EEPROM ERROR		• Part is defective.

NG command list 3

A way of looking the list: In case h ' 24 = 0010 0100(Refer to HEX code converting as binary code.)

NG sensor becomes second bit(LOAD FG) and fifth bit(RIBBON CD0).

NG_CODE4

NG command	NG bit	Contents of NG	Board/REF	Check item
h' E5	bit 6	RIBBON_CD1_ERROR	SE-423 board/D302	• Connector is removed./ Part is defective.
			SE-424 board/Q351	• Optical axis is out of place.
	bit 5	RIBBON_CD0_ERROR	SE-423 board/D301	• Connector is removed./ Part is defective.
			SE-424 board/Q350	• Optical axis is out of place.
	bit 4	BARCODE_ERROR	SE-425 board/PH401	• Connector is removed./ Part is defective.
				• Optical axis is out of lace.
	bit 3	PP_JAM_ERROR	SE-422 board/PH250	• Connector is removed./ Part is defective.
	bit 2	LOAD_FG_ERROR	SE-418 board/PH101	• Connector is removed./ Part is defective.
	bit 1	RIBBON_FG_ERROR	SE-417 board/PH1	• Connector is removed./ Part is defective.
	bit 0			

A way of looking the list: In case h ' 42 = 0100 0010(Refer to HEX code converting as binary code.)

NG sensor becomes first bit(LOAD TMG sensor) and sixth bit(JAM sensor).

NG_CODE5

NG command	NG bit	Contents of NG	Board/REF	Check item
h' E0	bit 6	PP_JAM_ERROR	SE-422 board/PH250	There is a print paper in the mechanical deck.
	bit 5	END_OF_RIBBON	SE-423 board/D301, D302	Ribbon end
			SE-424 board/Q350, Q351	
	bit 4	NO_RIBBON	Push SW	There is no ribbon cartridge.
	bit 3	NO_PAPER	SE-426 board/PH451	There is no print paper.
	bit 2	REMOVE_PRINTS	SE-428 board/PH550	EJCT_TMG sensor becomes ON.
	bit 1	REMOVE_PRINTS	SE-427 board/PH501	LOAD_TMG sensor becomes ON.
	bit 0	CLOSE_COVER	SE-429 board/S150	PLATEN_COVER is opened.

NG_CODE6

NG command	NG bit	Contents of NG	Board/REF	Check item
h' E3	bit 6	PLT_POS	SE-419 board/PH150	• Connector is removed.
	bit 5	LOAD_FG	SE-418 board/PH1	• Part is defective.
	bit 4	RBN_FG	SE-417 board/PH1	• There is no sensor sensitive by mistaken
	bit 3	TRAY_POS1	SE-429 board/PH602	assembling the mechanism.
	bit 2	TRAY_POS0	SE-429 board/PH601	
	bit 1	HED_POS1	SE-420 board/PH202	
	bit 0	HED_POS0	SE-420 board/PH201	

6-3. MECHANISM TROUBLESHOOTING

The three main troubles of the printer mechanism deck are as follows.
1. Paper feed troubles such as miss-feeding, double-feeding, etc.
2. Paper ejection troubles such as jamming which occur after printing
3. Printing troubles from printing results

The following describes how to first locate the area with the troubles and how to solve the troubles smoothly.

1. Paper feed troubles
Location : Paper supply block assembly

Chuck trouble occurs because the paper has not reached the platen. The possible causes are the paper can not be fed properly due to the wear of the paper feed rubber or the platen could not chuck the paper due to damage of parts.
If paper is double-fed, check the torque limiter and separating roller.
If the top part of the paper is badly scratched (scratches caused by the mechanism are allowed to a certain extent), check the roller as the paper feed load may have become lighter.

Location : Paper supply tray assembly

The paper cannot be fed even though the paper feed block assembly and paper supply lever are working normally.
This is because the paper is not being fed from the paper supply tray.
The possible causes are the deformation of the claw of the paper supply tray or the paper is bent when the paper is set to the tray.

2. Paper ejection trouble
Location : Platen cover assembly

After completing printing, paper ejection is carried out, but the paper is not ejected. Paper is jammed at the top of the platen.
This paper ejection trouble is caused by the damage of paper holding parts of the platen cover (upper cover which can be opened and closed for reparing paper jamming).

Location : Paper supply block assembly

Paper jams near the paper ejection exit and not on top of the platen.
This may occur when the paper ejection flap attached to the paper feed block assembly drops or when the support portion is damaged.

3. Printing trouble

Location : Platen motor assembly

Printing blurring (vertical lines).

This may be caused by the scratches and damage of the gears of the platen motor.

Details of locating the damaged gear are described in the operation manual.

Location : Thermal head

Horizontal lines on the printed side of the paper.

This may be caused by tone unevenness of the head and wear of the head.

Location : Paper supply tray assembly, head link section

The print is badly out of position.

To locate the trouble area, print using the following method. First, print using a standard size paper. The just before printing is completed, open the print cover.

The platen stops. Check the gap width between the black rubber of the platen and paper. If the gap is consistent throughout from top and bottom, it means that the print is out of position because the head is not attached at the proper position. Check the head link section around the head attached.

If the gap is not consistent, check the paper supply tray.